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PATENT & TRADEMARK OFFICE

PATENT
Docket No. 150.01160102

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Eugene P. MARSH) Group Art Unit: 2824
)
Serial No.: 10/680,038) Examiner: Christian Wilson
Confirmation No.: 8583)
)
Filed: 7 October 2003)
)
For: DEVICES CONTAINING ZIRCONIUM-PLATINUM-CONTAINING MATERIALS AND METHODS FOR PREPARING SUCH MATERIALS AND DEVICES

APPEAL BRIEF

Commissioner for Patents
Mail Stop - Appeal Brief - Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Brief is presented in support of the Appeal filed 27 December 2004, from the final rejection of claims 1-10 and 25-37 of the above identified application under 37 C.F.R. §§1.113 and 1.191.

This Brief is being submitted as set forth in 37 C.F.R. §41.32. Please charge Deposit Account No. 13-4895 the fee for filing this Brief under 37 C.F.R. §41.20(b)(2).

I. REAL PARTY IN INTEREST

The real party in interest of the above-identified patent application is the assignee, Micron Technology, Inc, assignee of the entire interest in the above-identified patent application by virtue of assignment from the inventor recorded on 31 August 2000, Reel 011141, Frame 0994.

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II. RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences known to Appellant's Representatives which would directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

The present application was filed with claims 1-47.

Claims 1-10 and 25-37 (all rejected) are pending and are the subject of this Appeal, with claims 11-24 having been canceled by preliminary amendment filed with the request for filing a divisional application, filed October 7, 2003, and claims 38-47 having been canceled in an Amendment and Response filed June 28, 2004 in response to a non-final office action (see Claims Appendix).

Appellant notes that the Examiner listed claims 38-47 as having been withdrawn from consideration in the Advisory Action mailed December 3, 2004 and in the Final Office Action mailed September 7, 2004. Appropriate correction is respectfully requested in the next Official Communication.

IV. STATUS OF AMENDMENTS

There are no amendments filed subsequent to the final Office Action that have not been entered.

Information Disclosure Statement

The Examiner has advised Appellant that the document "Precious Metal Labware Catalog from Alfa Aesar, 6 pgs" has not been considered in the present application, and the Examiner has not, as requested by Applicant, initialed that entry and returned the 1449 Form submitted with the Information Disclosure Statement filed January 13, 2004, a copy of which was provided with the Amendment and Response filed by Appellant herein on June 28, 2004.

According to the M.P.E.P., "[t]he Examiner **will** consider information which has been considered by the Office in a parent application when examining . . . a divisional application filed under 37 CFR 1.53(b)" (M.P.E.P. §609(I)(A)(2), emphasis added). As the present application is a divisional application filed under 37 C.F.R. 1.53(b) and as the document "Precious Metal Labware Catalog from Alfa Aesar, 6 pgs" was considered by the Examiner in the parent application, Serial No. 09/653,513 (now issued as U.S. Pat. No. 6,642,567), Appellant asserts that the Examiner is required to consider this art in the present application.

Furthermore, Appellant stipulated in the Amendment and Response filed June 28, 2004, that the Precious Metal Labware Catalog from Alfa Aesar, 6 pgs, is prior art for the purpose of examination of the present application, and reiterated that stipulation in the Response under 37 C.F.R. §1.116, filed 17 March 2004.

In view of the above comments, Appellant respectfully requests that the Examiner be directed to consider the document "Precious Metal Labware Catalog from Alfa Aesar" and that a copy of the 1449 Form including the Precious Metal Labware Catalog entry be returned to Appellant with the indication that the document was considered in prosecution of the present application.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Appellant's invention is directed to a method of manufacturing a semiconductor structure, the method including providing a semiconductor substrate or substrate assembly; providing a precursor composition including one or more zirconium complexes; providing a precursor composition including one or more platinum complexes, and forming a platinum-zirconium-containing film from the precursor compositions on a surface of the semiconductor substrate or substrate assembly (e.g., Specification, page 3, line 25 to page 4, line 2).

Appellant's invention is also directed to a method of forming a film on a substrate, the method including providing a substrate; providing a precursor composition including one or more zirconium complexes; providing a precursor composition including one or more platinum complexes (e.g., Specification, page 3, line 25 to page 4, line 2), and vaporizing the precursor compositions and directing them toward the substrate to form a platinum-zirconium-containing film from the precursor compositions on a surface of the substrate (e.g., Specification, page 2, line 29 to page 3, line 2).

Appellant's invention is further directed to a method for fabricating a capacitor including forming a first conductive layer; forming a dielectric layer directly on at least a portion of the first conductive layer; and forming a second conductive layer on the dielectric layer; wherein at least one of the first and second conductive layers includes a platinum-zirconium film (e.g., Specification, page 5, lines 22-27 and page 8, line 14).

Appellant's invention is additionally directed to a method for fabricating a capacitor having a first and a second electrode including providing a substrate; forming an insulative layer overlying a substrate; forming an opening in the insulative layer to expose the substrate; forming a conductive plug in the opening, the conductive plug forming a first portion of the first electrode of the capacitor, the conductive plug recessed below a surface of the insulative layer; forming a first conductive layer in the opening and overlying the conductive plug such that the first conductive layer is surrounded on sidewalls by the insulative layer, the first conductive layer forming a second portion of the first electrode, the first conductive layer being formed of a platinum-zirconium film; and forming a second conductive layer overlying the first conductive layer, the second conductive layer forming a third portion of the first electrode (e.g., Specification, page 5, line 29 to page 6, line 10).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1 to 4, 7, and 8 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,503,561 (Senzaki et al.).

Claim 25 stands rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,001,461 (Toyoda et al.).

Claims 5 and 9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over

U.S. Patent No. 6,503,561 (Senzaki et al.) in view of U.S. Patent No. 5,840,897 (Kirlin et al.).

Claims 6 and 10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,503,561 (Senzaki et al.) in view of U.S. Patent No. 5,431,958 (Desu et al.).

Claims 26 and 31 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,001,461 (Toyoda et al.) in view of U.S. Patent No. 5,101,848 (Miedema et al.).

Claim 27 stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,001,461 (Toyoda et al.) and U.S. Patent No. 5,101,848 (Miedema et al.) as applied to claim 26, and further in view of U.S. Patent No. 6,503,561 (Senzaki et al.).

Claims 28 and 29 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,001,461 (Toyoda et al.), U.S. Patent No. 6,503,561 (Senzaki et al.), and U.S. Patent No. 5,101,848 (Miedema et al.), as applied to claim 27, and further in view of U.S. Patent No. 5,840,897 (Kirlin et al.).

Claim 30 stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,001,461 (Toyoda et al.), U.S. Patent No. 6,503,561 (Senzaki et al.), and U.S. Patent No. 5,101,848 (Miedema et al.), as applied to claim 27, and further in view of U.S. Patent No. 5,431,958 (Desu et al.).

Claims 32 and 33 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,509,601 (Lee et al.) in view of U.S. Patent No. 6,503,561 (Senzaki et al.).

Claims 34 to 37 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,509,601 (Lee et al.) and U.S. Patent No. 6,503,561 (Senzaki et al.) as applied to claim 33, and further in view of U.S. Patent No. 6,600,185 (Tani et al.).

VII. ARGUMENT

Claims 1-4, 7, and 8 are not anticipated under 35 U.S.C. §102(e) by Senzaki et al.

For a claim to be anticipated under 35 U.S.C. §102, each and every element of the claim must be found in a single prior art reference (M.P.E.P. §2131). Furthermore, "[i]n determining that quantum of prior art disclosure which is necessary to declare an applicant's invention 'not novel' or 'anticipated' within section 102, the stated test is whether a reference contains an 'enabling disclosure' . . ." (M.P.E.P. §2121.01, quoting *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596, 600 (CCPA 1968)). Appellant asserts that Senzaki et al. do not contain an enabling disclosure with respect to independent claims 1 and 7 and to claims 2-4 and 8 dependent thereto.

It is settled that to provide an enabling disclosure, an application must include "adequate direction which reasonably would lead persons skilled in the art" to the claimed invention (*In re Edwards*, 568 F.2d 1349, 1352, 196 USPQ 465, 467 (CCPA 1978)). This concept was articulated in *In re Ruschig* as follows:

> "It is an old custom in the woods to mark trails by making blaze marks on the trees. It is no help in finding a trail . . . to be confronted simply by a large number of unmarked trees. Appellants are pointing to trees. We are looking for blaze marks which single out particular trees. We see none."

(379 F.2d 990, 994-995, 154 USPQ 118, 122 (CCPA 1967)). Thus, the disclosure must provide a guide directing one skilled in the art to the claimed invention. *Id.*

It was further found in *Fujikawa v. Wattanasin* that a disclosure failed to sufficiently describe a proposed sub-genus where the sub-genus was not preferred, and that the application "contained no blazemarks as to what compounds, other than those disclosed as preferred, might be of special interest. In the absence of such blazemarks, simply describing a large genus of compounds is not sufficient" (93 F.3d 1559, 1571, 39 USPQ2d 1895, 1905 (CAFC 1996), citing to *In re Ruschig*, 379 F.2d at 994, 154 USPQ at 122 ("Specific claims to single compounds require reasonably specific supporting disclosure and while . . . *naming* [each species] is not essential, something more than the disclosure of a class of 1000, or 100, or even 48 compounds is required.")).

Furthermore, "just because a moiety is listed as one possible choice for one position does not mean there is *ipsis verbis* support for every species or sub-genus that chooses that moiety. Were this the case, a 'laundry list' disclosure of every possible moiety for every possible position would constitute a written description of every species in the genus. This cannot be because such a disclosure would not 'reasonably lead' those skilled in the art to any particular species." (*Fujikawa v. Wattanasin*, 93 F.3d 1559, 1571, 39 USPQ2d 1895, 1905 (CAFC 1996)).

Appellant's independent claims 1 and 7 both recite methods wherein a precursor composition comprising one or more zirconium complexes and a precursor composition comprising one or more platinum complexes are provided to a substrate to form a platinum-zirconium-containing film on the substrate. Senzaki et al. provide no disclosure that would reasonably lead one skilled in the art to select a precursor composition comprising one or more zirconium complexes and a precursor composition comprising one or more platinum complexes to form a platinum-zirconium-containing film on a substrate.

Senzaki et al. disclose a process for deposition of a multiple metal or metal compound layer on a substrate of an electronic material that includes "providing a solventless mixture of two or more metal-ligand complex precursors . . . wherein the ligands are the same and are selected from the group consisting of alkyls, alkoxides, halides, hydrides, amides, imides, azides, nitrates, cyclopentadienyls, carbonyls, pyrazoles, and their fluorine, oxygen and nitrogen substituted analogs" (Senzaki et al., col. 2, line 62 to col. 3, line 4). "The metal of the metal ligand precursor [of Senzaki et al.] can be one or more of: zinc, cadmium, mercury, aluminum, germanium, gallium, indium, thallium, tin, lead, antimony, bismuth, lithium, sodium, potassium, rubidium, cesium, beryllium, magnesium, calcium, strontium, barium, scandium, yttrium, lanthanum, titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, manganese, technetium, rhenium, iron, ruthenium, osmium, cobalt, rhodium, iridium, nickel, palladium, platinum, copper, silver, gold, silicon, and cerium (Senzaki et al., col. 6, lines 52-61). Senzaki et al. provide no "blaze marks" to motivate one skilled in the art to select the combination of a zirconium-containing precursor composition and a platinum-containing precursor composition, according to Appellant's invention, in preference to any other combination of the listed metals. In fact, "[E]xemplary solventless mixtures of at least two metal-ligand complex precursors" of Senzaki et al. include:

(1) $Zr(N(CH_2CH_3)_2)_4$, $Sn(N(CH_2CH_3)_2)_4$, and $Ti(N(CH_2CH_3)_2)_4$; or
$Zr(N(C_3)_2)_4$ [*sic*], $Sn(N(CH_3)_2)_4$ and $Ti(N(CH_3)_2)_4$; or
$Zr(O(C_4H_9))_4$, $Sn(O(C_4H_9))_4$ and $Ti(O(C_4H_9))_4$ (providing deposition of zirconium, tin,
and titanium);

(2) $Ta(N(CH_3)_2)_5$ and $Ti(N(CH_3)_2)_5$; or
$CH_3CH_2N{=}Ta(N(CH_2CH_3)_2)_3$ and $Ti)N(CH_2CH_3)_2)_4$ [*sic*] (providing deposition of tantalum and titanium); or

(3) $Al(OCH_2CH_3)_3$ and $Ta(OCH_2CH_3)_5$ (providing deposition of aluminum and tantalum); or

(4) $Si(N(CH_2CH_3)_2$ and a metal-ligand complex precursor selected from the group consisting of:

$Ti(N(CH_2CH_3)_2)_4$,
$Zr(N(CH_2CH_3)_2)_4$
$Hf(N(CH_2CH_3)_2)_4$
$V(N(CH_2CH_3)_2)_5$
$V(N(CH_2CH_3)_2)_4$
$Nb(N(CH_2CH_3)_2)_5$
$Nb(N(CH_2CH_3)_2)_4$,
$CH_3CH_2N{=}Nb(N(CH_2CH_3)_2)_3$,
$CH_3CH_2N{=}V(N(CH_2CH_3)_2)_3$,
$(CH_3CH_2N{=})_2W(N(CH_2CH_3)_2)_2$,
$(CH_3CH_2N{=})_2Mo(N(CH_2CH_3)_2)_2$, and
$(CH_3CH_2N{=}Ta(N(CH_2CH_3)_2)_3$

(providing deposition of silicon with one of: titanium, zirconium, hafnium, vanadium, niobium, tungsten, molybdenum, and tantalum)

(Senzaki et al., col. 7, lines 24-38 and Examples 1-11). None of the above exemplary solventless mixtures disclose selection of a zirconium-containing precursor composition and a platinum-containing precursor composition, as claimed by Appellant.

The Examiner has cited a Board of Patent Appeals and Interferences opinion (*Ex parte A*, 17 USPQ2d 1716 (1990)) in support of the assertion that Senzaki et al. disclose Appellant's claims 1-4, 7, and 8. Appellant points out, however, that in *Ex parte A*, "appellants' thesis is that their compound is unexpectedly and significantly superior against anaerobic bacteria" (*Id.*, at 1719) while the document asserted to anticipate their invention (the claim reciting "an antibacterial pharmaceutical composition") described compounds disclosed as having, *inter alia*, "antibacterial activity" (*Id.*, at 1718-1719). Appellant asserts that the present application is distinguished from *Ex parte A* for at least the reason that in *Ex parte A*, the cited reference may be considered to have provided "blazemarks" to select a compound having antibacterial activity, while, on the other hand, Senzaki et al. provide no such direction or motivation whatsoever to select the combination of a zirconium-containing precursor compound and a platinum-containing precursor compound as recited in Appellant's claims 1-4, 7, and 8 in preference to any other listed precursor, and in particular in preference to any of the exemplary metal-ligand complex precursors taught by Senzaki et al.

In view of the above comments, Appellant asserts that claims 1-4, 7, and 8 are not anticipated under 35 U.S.C. §102(e) by Senzaki et al. for at least the reason that Senzaki et al. fail to provide an enabling disclosure for claims 1-4, 7, and 8.

Claims 25 is not anticipated under 35 U.S.C. §102(e) by Toyoda et al.

For a claim to be anticipated under 35 U.S.C. §102, each and every element of the claim must be found in a single prior art reference (M.P.E.P. §2131). Appellant submits that Toyoda et al. fail to disclose each and every element of claim 25.

Claim 25 recites a method for fabricating a capacitor comprising:

> forming a first conductive layer;
> forming a dielectric layer directly on at least a portion of the first conductive layer; and
> forming a second conductive layer on the dielectric layer;
> wherein at least one of the first and second conductive layers comprises a

platinum-zirconium film.

Initially, Appellant respectfully points out that Appellant believes that the Examiner has mischaracterized Appellant's argument with respect to Toyoda et al. presented in the Amendment and Response filed in the present application on June 28, 2004 (the remarks of which are incorporated herein by reference). In the Final Office Action, issued September 27, 2004, at page 9, lines 17-18, the Examiner asserts that "applicant alleges that Toyoda et al. fails to disclose the limitations of fabricating a capacitor."

Appellant respectfully points out, however, that Appellant commented in the Amendment and Response filed June 28, 2004 at page 11, lines 15-19, that "in no instance do Toyoda et al. teach a method for fabricating a capacitor **that includes forming a first conductive layer; forming a dielectric layer directly on at least a portion of the first conductive layer; and forming a second conductive layer on the dielectric layer, wherein at least one of the first and second conductive layers includes a platinum-zirconium film, as recited in Appellant's claim 25**" (emphasis added).

In the Final Office Action, issued September 27, 2004, the Examiner also contends that Example 14 includes all the limitations of claim 25. Appellant disagrees.

Example 14, referring to Figure 16, discloses an embodiment of Toyoda et al. wherein a silicon wafer (1) with a thermal oxide film (5) form a substrate, on which a platinum-zirconium amorphous film (3) is formed. A platinum film (33) is formed on the platinum-zirconium layer (3), and a strontium titanate dielectric thin film (34) is formed on the platinum film (33). Finally, a gold film (35) is formed on the dielectric layer. Thus, in this example, the strontium titanate dielectric layer is formed directly on the platinum film (i.e., the "first conductive layer"), and not directly on the platinum-zirconium film layer. Furthermore, the conductive layer formed on the dielectric layer (i.e., the "second conductive layer") is gold, not a platinum-zirconium film.

Appellant, therefore, asserts that claim 25 is not anticipated by Toyoda et al. under 35 U.S.C. §102(e) for at least the reason that each and every element of claim 25 is not found in Toyoda et al.

Claims 5 and 9 are not obvious under 35 U.S.C. §103(a) over Senzaki et al. in view of Kirlin et al.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally the prior art references must teach or suggest all the claim limitations. *See* M.P.E.P. §2143.

For at least the reasons discussed, *supra*, Appellant asserts that Senzaki et al. fail to anticipate Appellant's independent claims 1 and 7, as well as any claims dependent thereto. Appellant further asserts that Kirlin et al. fail to provide that which is missing from Senzaki et al. to arrive at Appellant's claims 5 and 9, which are dependent from claims 1 and 7, respectively.

Kirlin et al. disclose a metalorganic complex of the formula MA_yX, wherein the metal (M) may be selected from a group of 52 possible metals (Kirlin et al., Abstract), including platinum and zirconium. These metals are member of Groups 1-6, 8-11, 13-15, the Lanthanide Series, and the Actinide Series of the Periodic Table. For similar reasons as discussed, *supra*, with respect to Senzaki et al., Appellant asserts that there is no disclosure in Kirlin et al. whatsoever that would provide the required "blazemarks" to one skilled in the art to select the combination of platinum and zirconium precursors or to form a platinum-zirconium containing film. Kirlin et al. disclose several metal source reagents/compounds (Tables I-VI) and metal containing films (table IV), as well as 47 examples, none of which include platinum, let alone a method including providing a precursor composition including one or more zirconium complexes and a precursor composition including one or more platinum complexes whereby a platinum-zirconium containing film is formed.

Additionally, Kirlin et al. disclose a metalorganic complex of the formula MA_yX, wherein A is a monodentate or multidentate organic ligand coordinated to M which allows complexing of MA_y with X; y is an integer having a value of 2, 3, or 4; and X is a monodentate or multidentate ligand coordinated to M and containing one or more atoms independently selected from the group consisting of atoms of the elements C, N, H, S, O and F (Kirlin et al., col. 3, lines 28-35).

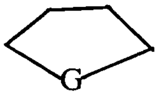
The ligand A of Kirlin et al. may be selected from the group consisting of β-diketonates and their sulfur and nitrogen analogs, β-ketoesters and their sulfur and nitrogen analogs, cyclopentadienyls, alkyls, perfluoroalkyls, alkoxides, profluoroalkoxides, and Schiff bases, specific examples of the A_y ligand including:

(i) 2,2,6,6-tetramethyl-3,5-heptanedionate;
(ii) 1,1,1,5,5,5-hexafluoro-2,4-pentanedionate;
(iii) 1,1,1,2,2,3,3-heptafluoro-7,7 diemthyl-4,6-octanedionate;
(iv) cyclopentadienyl;
(v) 4,4'-(ethane-1,2-diyldiimino) bis (3-pentene-2-one);
(vi) pentamethylcyclopentadienyl and other substituted cyclopentadienyls;
(vii) 2,4-pentanedionate; and
(viii) 1,1,1-trifluoro-2,4-pentanedionate.

(Kirlin et al., col. 3, lines 40-57).

Appellant respectfully points out that while substituted or unsubstituted cyclopentadienyls are indicated as an optional A ligand, in the complex of Kirlin et al., there are 2, 3, or 4 A ligands (i.e., the A ligand is present as A_y, wherein y is an integer having a value of 2, 3, or 4). On the other hand, in Appellant's claims 5 and 9, there is only one Cp group of the platinum complex $CpPt(Me)_3$, wherein Cp may be a substituted or unsubstituted cyclopentadienyl group.

Furthermore, while the ligand X of the complex MA_yX of Kirlin et al. is broadly disclosed as a monodentate or multidentate ligand coordinated to M and containing one or more atoms independently selected from the group consisting of atoms of the elements C, N, H, S, O, and F (Kirlin et al., col. 3, lines 31-35), it is further disclosed that the ligand X may be selected from the group consisting of oxyhydrocarbyl ligands, nitrogenous oxyhydrocarbyl ligands, fluorooxyhydrocarbyl ligands, thiooxyhydrocarbyl ligands, amines, polyamines, bypyridines, crown ethers, thioethers, tetraglyme, tetrahydrofuran, bipyridine, 18-crown-6 ethers, ligands of the formula:



wherein G is –O–, –S–, or –NR–, wherein R is H or hydrocarbyl,

and ligands of the formula:

$$R^0(C(R^1)_2C(R^2)_2O)_nR^0$$

wherein:

R^0 is H, methyl, ethyl, n-propyl, cyanato, perfluoroethyl, perfluoro-n-propyl, or vinyl;
R^1 is H, F, or a sterically acceptable hydrocarbyl substituent;
R^2 is H, F, or a sterically acceptable hydrocarbyl substituent;
n is 2, 3, 4, 5, or 6; and each R^0, R^1, and R^2 may be the same as or different from the other R^0, R^1, and R^2, respectively, with examples of such lignad X including tetraglyme, tetrahydrofuran, bypydridine [*sic*], and 18-crown-6 ethers
(Kirlin et al. col. 3, line 58 to col. 4, line 27).

Appellant respectfully asserts that not only does the disclosure of examples of the X ligand of Kirlin et al. fail to teach or suggest a methyl group, but also only one X ligand is coordinated to the metal, M, in the MA_yX complex of Kirlin et al., while the methyl $(Me)_3$ group of Appellant's $CpPt(Me)_3$ complex as recited in Appellant's claims 5 and 9 is present three times.

In view of the above comments, Appellant asserts that Kirlin et al. fail to provide that which is missing from the disclosure of Senzaki et al. Further, Kirlin et al. fail to specifically teach or suggest the platinum complexes recited in Appellant's claims 5 and 9. For at least these reasons, the combination of Senzaki et al. and Kirlin et al. fail to provide a *prima facie* case of obviousness over the rejected claims 5 and 9.

Claims 6 and 10 are not obvious under 35 U.S.C. §103(a) over Senzaki et al. in view of Desu et al.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally the prior art references must teach or suggest all the claim limitations. *See* M.P.E.P. §2143.

For at least the reasons discussed, *supra*, Appellant asserts that Senzaki et al. fail to teach provision of a precursor composition comprising one or more zirconium containing complexes and a precursor composition comprising one or more platinum containing complexes, and forming a platinum-zirconium-containing film, as recited in Appellant's independent claims 1 and 7, as well as claims dependent thereto. Appellant further asserts that Desu et al. fail to provide that which is missing from Senzaki et al. to arrive at Appellant's claims 6 and 10, dependent from claims 1 and 7, respectively.

Desu et al. teach a method to produce doped and undoped lead zirconate titanate thin films by CVD (Desu et al., Abstract) using lead, zirconium, and titanium metal precursors (Desu et al., col. 3, lines 38-41 and Examples 1 and 2). There is no teaching or suggestion of either a platinum precursor complex, nor of forming a platinum-zirconium containing film. Thus, Desu et al. at least fail to provide a precursor composition comprising one or more platinum complexes which is missing from the teachings of Senzaki et al.

Furthermore, Appellant respectfully points out that one skilled in the art would not be motivated to select the $Zr(acac)_4$ recited in present claims 6 and 10 in view of Desu et al. Desu et al., at column 5, line 47, discloses that "[s]everal difficulties were encountered in using zirconium acetylacetonate [$Zr(acac)_4$] . . . precursors" in the methods of Desu et al. (col. 5, lines 46-48). Therefore, in particular Desu et al. provides no motivation to combine the teachings of Senzaki et al. with those of Desu et al., with respect to the precursor $Zr(acac)_4$.

For at least the above reasons, Appellant asserts that the Examiner has failed to establish a *prima facie* case of obviousness with the combination of Senzaki et al. and Desu et al. in the rejection of claims 6 and 10.

Claims 26 and 31 are not obvious under 35 U.S.C. §103(a) over Toyoda et al. in view of Miedema et al.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally the prior art references must teach or suggest all the claim limitations. *See* M.P.E.P. §2143.

As discussed, *supra*, as Toyoda et al. do not teach the method of Appellant's claim 25 wherein a first conductive layer is formed, a dielectric layer is formed directly on at least a portion of the first conductive layer, and a second conductive layer is formed on the dielectric layer, wherein at least one of the first and second conductive layers comprises a platinum-zirconium film. Furthermore, Miedema et al. fail to provide that which is missing from Toyoda et al. in the recitation of independent claim 25, from which claims 26 and 31 directly or ultimately depend.

Miedema et al. teach a device including semiconductor elements and conductor tracks of an oxidic superconducting material, electrically conductive connections formed between semiconductor elements and conductor tracks, with an electrically conductive antidiffusion layer between the semiconductor elements and the conductor tracks. The antidiffusion layer is an amorphous alloy of the formula A_xE_{1-x}, wherein A is one or more of Zr, Nb, Mo, Ru, Rh, Pd, Hf, Ta, W, Re, Os, Ir, and Pt; E is one or more of B, Si, Al, Ga, and Ge; and x is 0.7 to 0.95 (Miedema et al., Abstract). An additional embodiment is shown in Example 1, which may include PtZr amorphous alloys (Miedema et al., col. 3, lines 46-48 and the Table at col. 3, line 60).

Appellant asserts that while Miedema et al. may include a platinum-zirconium amorphous alloy, they fail to teach the method as recited in present claim 25. As indicated in Example 2 (with reference to Figure 1) of Miedema et al., an insulation layer 2 of magnesium oxide (or alternatively $SrTiO_3$ or ZrO_2) is formed on a substrate 1 of silicon (or alternatively gallium arsenide). An oxidic superconducting film 3 of $YBa_2Cu_3O_{6.7}$ is formed over the insulation layer. An optional silver or gold layer 6 is formed on the superconducting film, and the amorphous metal layer 5 is formed over either the superconducting film (as shown in Figure 2 of Miedema et al.) or over the optional gold or silver layer (as shown in Figure 1 of Miedema et al.). In contrast, the method of Appellant's claim 25 includes forming a first conductive layer; forming a dielectric layer directly on at least a portion of the first conductive layer; and forming a second conductive layer on the dielectric layer; wherein at least one of the first and second conductive layers comprises a platinum-zirconium film, which is distinguished from the invention of Miedema et al.

Appellant submits, therefore, that the Examiner has failed to make a *prima facie* case of obviousness with the combination of Toyoda et al. and Miedema et al. in the rejection of claims 26 and 31.

Claim 27 is not obvious under 35 U.S.C. §103(a) over Toyoda et al. and Miedema et al., and further in view of Senzaki et al.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally the prior art references must teach or suggest all the claim limitations. *See* M.P.E.P. §2143.

As discussed, *supra*, Toyoda et al. do not teach the method of Appellant's claim 25 wherein a first conductive layer is formed, a dielectric layer is formed directly on at least a portion of the first conductive layer, and a second conductive layer is formed on the dielectric layer, wherein at least one of the first and second conductive layers comprises a platinum-zirconium film. Furthermore, Miedema et al. and Senzaki et al. fail to provide that which is missing from Toyoda et al. in the recitation of claim 25, from which claim 27 ultimately depends.

As discussed, *supra*, the combination of Toyoda et al. and Miedema et al. fails to provide a method for fabricating a capacitor including forming a first conductive layer; forming a dielectric layer on at least a portion of the first conductive layer; and forming a second conductive layer on the dielectric layer, wherein at least one of the first and second conductive layers comprises a platinum-zirconium film, as recited in Appellant's claim 25. Furthermore, Senzaki et al. also to provide the elements missing from Toyoda et al. and Miedema et al. Senzaki et al., as discussed *supra*, fail to teach a platinum-zirconium film. Additionally, Senzaki et al. also fail to teach the method of claim 25 wherein a first conductive layer is formed, a dielectric layer is formed directly on at least a portion of the first conductive layer, and a second conductive layer is formed on the dielectric layer. In fact, neither the specification nor the examples of Senzaki et al. explicitly teach or suggest a dielectric layer at all. The disclosure of Senzaki et al. is directed to the formation of a mixed metal or metal compound layer on a substrate, and each of the deposition examples (Examples 6-11) of Senzaki et al. disclose a metal containing layer deposited on a substrate.

In view of the above comments, Appellant asserts that claim 27 is nonobvious over Toyoda et al. in view of Miedema et al. and Senzaki et al.

Claims 28 and 29 are not obvious under 35 U.S.C. §103(a) over Toyoda et al., Senzaki et al. and Miedema et al., and further in view of Kirlin et al.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally the prior art references must teach or suggest all the claim limitations. *See* M.P.E.P. §2143.

As discussed, *supra*, the combination of Toyoda et al. with Senzaki et al. and Miedema et al. fail to teach or suggest either claim 27 or claim 25, from which claim 27 ultimately depends. Appellant further asserts that Kirlin et al. fail to provide that which is missing from Toyoda et al., Senzaki et al. and Miedema et al. in the recitation of claims 28 and 29, dependent from claim 27 and ultimately dependent from claim 25.

Kirlin et al. teach a metalorganic complex of the formula MA_yX, wherein the M, A, X, and y are as disclosed in Kirlin et al. at column 3, line 19 to column 4, line 27. The metalorganic complexes of Kirlin et al. may be employed in a solvent or suspending agent to form a metal source reagent that may be volatilized and used in a CVD reactor to deposit metal-containing film on a substrate (Kirlin et al., col. 4, line 65 to col. 5, line 7). Kirlin et al. do not teach the method of Appellant's claim 25, from which claims 28 and 29 ultimately depend, wherein a first conductive layer is formed, a dielectric layer is formed directly on at least a portion of the first conductive layer, and a second conductive layer is formed on the dielectric layer, wherein at least one of the first and second conductive layers comprises a platinum-zirconium film.

In addition, Appellant submits that the Examiner's rejection of claims 28 and 29 which required the combination of 4 separate documents, could only be made by the use of hindsight reconstruction. The use of hindsight reconstruction is improper ("It is impermissible, however, simply to engage in a hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps." *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991)). Appellant respectfully submits that the Examiner's use of 4 separate documents to reject claims 28 and 29 is impermissible hindsight reconstruction.

In view of the foregoing comments, Appellant respectfully submits that claims 28 and 29 are non-obvious in view of Toyoda et al., Senzaki et al. and Miedema et al., and further in view of Kirlin et al.

Claim 30 is not obvious under 35 U.S.C. §103(a) over Toyoda et al., Senzaki et al. and Miedema et al., and further in view of Desu et al.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally the prior art references must teach or suggest all the claim limitations. *See* M.P.E.P. §2143.

As discussed, *supra*, the combination of Toyoda et al. with Senzaki et al. and Miedema et al. fail to teach or suggest either claim 27 or claim 25, from which claim 27 ultimately depends. Appellant further asserts that Desu et al. fail to provide that which is missing from Toyoda et al., Senzaki et al. and Miedema et al. to arrive at Appellant's claim 30, dependent from claim 27 and ultimately dependent from claim 25.

As discussed, *supra*, Desu et al. fail to teach or suggest either a platinum precursor complex or a method of forming a platinum-zirconium containing film. Furthermore, Appellant points out that Desu et al. teach a method to produce doped and undoped lead zirconate titanate (PZT) thin films by metalorganic chemical vapor deposition on substrates using hot-wall and cold-wall CVD reactors (Desu et al., abstract). Desu et al. do not teach or suggest, in either the specification or examples, formation of a dielectric layer on a first conductive layer at all, much less the method of claim 25 wherein a first conductive layer is formed, a dielectric layer is formed directly on at least a portion of the first conductive layer, and a second conductive layer is formed on the dielectric layer. Thus, Desu et al. fail to provide that which is missing from Toyoda et al., Senzaki et al. and Miedema et al. to arrive at Appellant's claim 30.

It is further pointed out that the Examiner's rejection of claim 30 herein, as in the rejection of claims 28 and 29, used 4 separate documents. For the reasons discussed, *supra*, Appellant also asserts that the Examiner's rejection of claim 30 was made through the use of impermissible hindsight reconstruction.

In view of the above comments, Appellant respectfully submits that claim 30 is nonobvious in view of Toyoda et al., Senzaki et al. and Miedema et al., and further in view of Desu et al.

Claims 32-33 are not obvious under 35 U.S.C. §103(a) over Lee et al. in view of Senzaki et al.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally the prior art references must teach or suggest all the claim limitations. *See* M.P.E.P. §2143.

Appellant's independent claim 32 recites a method for fabricating a capacitor having a first and a second electrode, including: providing a substrate; forming an insulative layer overlying a substrate; forming an opening in the insulative layer to expose the substrate; forming a conductive plug in the opening, the conductive plug forming a first portion of the first electrode of the capacitor, the conductive plug recessed below a surface of the insulative layer; forming a first conductive layer in the opening and overlying the conductive plug such that the first conductive layer is surrounded on sidewalls by the insulative layer, the first conductive layer forming a second portion of the first electrode, the first conductive layer being formed of a platinum-zirconium film; and forming a second conductive layer overlying the first conductive layer, the second conductive layer forming a third portion of the first electrode.

As admitted by the Examiner in the Final Office Action, at page 7, lines 10-11, Lee et al. fail to teach a conductive layer formed of a platinum-zirconium film. For the reasons discussed, *supra*, Senzaki et al. also fail to teach a platinum-zirconium film. Thus, Senzaki et al. fail to provide that which is missing from Lee et al., and the combination of Lee et al. with Senzaki et al. fails to teach each and every element of Appellant's claim 32. Further, for at least the reason that claim 33 is dependent upon claim 32, Appellant asserts that the combination of Lee et al. with Senzaki et al. fails to teach each and every element of Appellant's claim 33.

Claims 34-37 are not obvious under 35 U.S.C. §103(a) over Lee et al. and Senzaki et al., and further in view of Tani et al.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally the prior art references must teach or suggest all the claim limitations. *See* M.P.E.P. §2143.

For reasons discussed, *supra*, Appellant asserts that claims 32 and 33 are nonobvious over the combination of Lee et al. in view of Senzaki et al. Furthermore, Tani et al. fail to provide that which is missing from the above combination to provide the embodiment of claims 34-37, dependent directly or ultimately from claims 32 and 33.

Tani et al. disclose a ferroelectric capacitor having a top electrode, a bottom electrode, a ferroelectric body disposed between the top and bottom electrodes, and a dielectric lining disposed below the top electrode and above the bottom electrode (Tani et al. Abstract). Tani et al. disclose certain conductive layers, including iridium oxide (col. 4, lines 18-20), platinum, and iridium (col. 6, lines 39-40), but fail to teach or suggest a conductive layer formed of a platinum-zirconium film. Thus, in view of the above comments, Tani et al. fail to teach or suggest that which is missing from the combination of Lee et al. in view of Senzaki et al.

For at least the above reasons, Appellant submits that the Examiner has failed to make a *prima facie* case of obviousness with respect to the combination of Lee et al., in view of

Senzaki et al., and further in view of Tani et al. in the rejection of claims 34-37.

VIII. SUMMARY

For the foregoing reasons, Appellant respectfully requests that the Board review and reverse the rejection of claims 1-10 and 25-37 as discussed herein and that notification of the allowance of these claims be issued.

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CERTIFICATE UNDER 37 CFR §1.10:
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The undersigned hereby certifies that this paper is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR §1.10 on the date indicated above and is addressed to **Mail Stop Appeal Brief Patents**, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

By: Sara E. Ol
Name: Sara E. Olson

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CLAIMS APPENDIX

Serial No.10/680,038

Docket No. 150.01160102

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1. **(Rejected)** A method of manufacturing a semiconductor structure, the method comprising:

providing a semiconductor substrate or substrate assembly;

providing a precursor composition comprising one or more zirconium complexes;

providing a precursor composition comprising one or more platinum complexes; and

forming a platinum-zirconium-containing film from the precursor compositions on a surface of the semiconductor substrate or substrate assembly.

2. **(Rejected)** The method of claim 1 wherein the step of forming a platinum-zirconium-containing film comprises vaporizing the precursor compositions and directing them toward the semiconductor substrate or substrate assembly using a chemical vapor deposition technique.

3. **(Rejected)** The method of claim 2 wherein the chemical vapor deposition technique comprises flash vaporization, bubbling, microdroplet formation, or combinations thereof.

4. **(Rejected)** The method of claim 1 wherein the semiconductor substrate is a silicon wafer or a gallium arsenide wafer or silicon on glass.

5. **(Rejected)** The method of claim 1 wherein the platinum precursor composition comprises a platinum complex selected from the group consisting of $CpPt(Me)_3$, wherein Me is a methyl group and Cp is substituted or unsubstituted cyclopentadienyl, $Pt(CO)_2Cl_2$, cis-$Pt(CH_3)_2[(CH_3)NC]_2$, $(COD)Pt(CH_3)_2$, $(COD)Pt(CH_3)Cl$, $(C_5H_5)Pt(CH_3)(CO)$,$(acac)(Pt)(CH_3)_3$, $Pt(acac)_2$, $Pt(PF_3)_4$, wherein COD = 1,5-cycloctadiene and acac = acetylacetonate, and mixtures

thereof.

6. **(Rejected)** The method of claim 1 wherein the zirconium precursor composition comprises a zirconium complex selected from the group consisting of $Zr(OC(CH_3)_3)_4$, $Zr(O(CH_2)_3CH_3)_4$, $Zr(O(CH_2)_2CH_3)_4$, $Zr(acac)_4$, and mixtures thereof.

7. **(Rejected)** A method of forming a film on a substrate, the method comprising:

providing a substrate;

providing a precursor composition comprising one or more zirconium complexes;

providing a precursor composition comprising one or more platinum complexes; and

vaporizing the precursor compositions and directing them toward the substrate to form a platinum-zirconium-containing film from the precursor compositions on a surface of the substrate.

8. **(Rejected)** The method of claim 7 wherein vaporizing the precursor compositions to form a platinum-zirconium-containing film comprises using a chemical vapor deposition technique.

9. **(Rejected)** The method of claim 7 wherein the platinum precursor composition comprises a platinum complex selected from the group consisting of $CpPt(Me)_3$, wherein Me is a methyl group and Cp is substituted or unsubstituted cyclopentadienyl, $Pt(CO)_2Cl_2$, cis-$Pt(CH_3)_2[(CH_3)NC]_2$, $(COD)Pt(CH_3)_2$, $(COD)Pt(CH_3)Cl$, $(C_5H_5)Pt(CH_3)(CO)$,$(acac)(Pt)(CH_3)_3$, $Pt(acac)_2$, $Pt(PF_3)_4$, wherein COD = 1,5-cycloctadiene and acac = acetylacetonate, and mixtures thereof.

10. **(Rejected)** The method of claim 1 wherein the zirconium precursor composition comprises a zirconium complex selected from the group consisting of $Zr(OC(CH_3)_3)_4$,

$Zr(O(CH_2)_3CH_3)_4$, $Zr(O(CH_2)_2CH_3)_4$, $Zr(acac)_4$, and mixtures thereof.

11.-24.**(Canceled)**

25. **(Rejected)** A method for fabricating a capacitor comprising:

forming a first conductive layer;

forming a dielectric layer directly on at least a portion of the first conductive layer; and

forming a second conductive layer on the dielectric layer;

wherein at least one of the first and second conductive layers comprises a platinum-zirconium film.

26. **(Rejected)** The method of claim 25 wherein the platinum-zirconium film is vapor-deposited and includes platinum and zirconium in a ratio of platinum(x):zirconium(1-x), wherein x is in the range of about 0.3 to about 0.9.

27. **(Rejected)** The method of claim 26 wherein the platinum-zirconium film is formed by chemical vapor co-deposition of platinum and zirconium precursor compositions.

28. **(Rejected)** The method of claim 27 wherein the platinum precursor composition comprises a platinum complex selected from the group consisting of $CpPt(Me)_3$, wherein Me is a methyl group and Cp is substituted or unsubstituted cyclopentadienyl, $Pt(CO)_2Cl_2$, cis-$Pt(CH_3)_2[(CH_3)NC]_2$, $(COD)Pt(CH_3)_2$, $(COD)Pt(CH_3)Cl$, $(C_5H_5)Pt(CH_3)(CO)$,$(acac)(Pt)(CH_3)_3$, $Pt(acac)_2$, $Pt(PF\ _3)_4$, wherein COD = 1,5-cycloctadiene and acac = acetylacetonate, and mixtures thereof.

29. **(Rejected)** The method of claim 28 wherein the platinum precursor composition comprises $CpPt(Me)_3$, wherein Me is a methyl group and Cp is methyl cyclopentadienyl.

30. **(Rejected)** The method of claim 27 wherein the zirconium precursor composition comprises a zirconium complex selected from the group consisting of $Zr(OC(CH_3)_3)_4$, $Zr(O(CH_2)_3CH_3)_4$, $Zr(O(CH_2)_2CH_3)_4$, $Zr(acac)_4$, and mixtures thereof.

31. **(Rejected)** the method of claim 27 wherein the chemical vapor co-deposition is conducted by depositing a ration of platinum to zirconium in the range of about 0.3 to about 0.9.

32. **(Rejected)** A method for fabricating a capacitor having a first and a second electrode, comprising:

providing a substrate;

forming an insulative layer overlying a substrate;

forming an opening in the insulative layer to expose the substrate;

forming a conductive plug in the opening, the conductive plug forming a first portion of the fist electrode of the capacitor, the conductive plug recessed below a surface of the insulative layer;

forming a first conductive layer in the opening and overlying the conductive plug such that the first conductive layer is surrounded on sidewalls by the insulative layer, the first conductive layer forming a second portion of the first electrode, the first conductive layer being formed of a platinum-zirconium film; and

forming a second conductive layer overlying the first conductive layer, the second conductive layer forming a third portion of the first electrode.

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33. **(Rejected)** The method of claim 32 further comprising:

creating a dielectric layer on the second conductive layer, the first conductive layer substantially preventing oxidation of the dielectric layer; and

creating the second electrode overlying the dielectric layer, the first and the second electrode and the dielectric layer forming the capacitor.

34. **(Rejected)** The method of claim 33 wherein forming the second electrode comprises sputtering an electrically conductive material to overly the dielectric layer.

35. **(Rejected)** The method of claim 34 wherein forming the first conductive layer comprises:

admitting a platinum precursor composition to a chemical vapor deposition reaction chamber;

admitting a zirconium precursor composition to the chemical vapor deposition reaction chamber; and

applying sufficient reaction gas to the chemical vapor deposition reaction chamber to cause co-deposition of a platinum-zirconium film.

36. **(Rejected)** The method of claim 35 further comprising planarizing the insulative layer prior to forming the conductive plug.

37. **(Rejected)** The method of claim 36 wherein forming the conductive plug comprises depositing an in-situ doped polysilicon in the opening.

38.-47.**(Canceled)**

RELATED PROCEEDINGS APPENDIX

Serial No. 10/680,038

Docket No. 150.01160102

There are no appeals or interferences known to Appellant's Representatives which would directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

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EVIDENCE APPENDIX

Serial No. 10/680,038

Docket No. 150.01160102

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1. Senzaki et al. (U.S. Patent No. 6,503,561) (entered into the record by citation within the non-final Office Action mailed March 26, 2004).
2. Toyoda et al. (U.S. Patent No. 6,001,461) (entered into the record by citation within the non-final Office Action mailed March 26, 2004).
3. Kirlin et al. (U.S. Patent No. 5,840,897) (entered into the record by citation within the non-final Office Action mailed March 26, 2004).
4. Desu et al. (U.S. Patent No. 5,431,958) (entered into the record by citation within the non-final Office Action mailed March 26, 2004).
5. Miedema et al. (U.S. Patent No. 5,104,848) (entered into the record by citation within the non-final Office Action mailed March 26, 2004).
6. Lee et al. (U.S. Patent No. 6,509,601) (entered into the record by citation within the non-final Office Action mailed March 26, 2004).
7. Tani et al. (U.S. Patent No. 6,600,185) (entered into the record by citation within the non-final Office Action mailed March 26, 2004).
8. Response to non-final Office Action mailed June 28, 2004.
9. Response to final Office Action mailed November 17, 2004.
10. Marsh (U.S. Patent No. 6,642,567) (parent of the present application).

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CITED AUTHORITIES AND DOCUMENTS

Serial No. 10/680,038

Docket No. 150.01160102

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1. M.P.E.P. §2131
2. M.P.E.P. §2121.01
3. M.P.E.P. §2143
4. M.P.E.P. §609(I)(A)(2)
5. *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596 (CCPA 1968)
6. *In re Edwards*, 568 F.2d 1349, 196 USPQ 465, (CCPA 1978)
7. *In re Ruschig* 379 F.2d 990, 154 USPQ 118 (CCPA 1967)
8. *Fujikawa v. Wattanasin*, 93 F.3d 1559, 39 USPQ2d 1895 (CAFC 1996)
9. *Ex parte A*, 17 USPQ2d 1716 (1990)
10. *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991)

IV. INFORMATION DISCLOSURE STATEMEMT (IDS)

Mere listing of a reference in an information disclosure statement is not taken as an admission that the reference is prior art against the claims. *Riverwood Int'l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1354-55, 66 USPQ2d 1331, 1337-38 (Fed Cir. 2003) (listing of applicant's own prior patent in an IDS does not make it available as prior art absent a statutory basis); *see also* 37 CFR 1.97(h) ("The filing of an information disclosure statement shall not be construed to be an admission that the information cited in the statement is, or is considered to be, material to patentability as defined in § 1.56(b).").<

2131 Anticipation — Application of 35 U.S.C. 102(a), (b), and (e) [R-1]

35 U.S.C. 102. Conditions for patentability; novelty and loss of right to patent.

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States, or

(c) he has abandoned the invention, or

(d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or

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(e) the invention was described in — (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language; or<

(f) he did not himself invent the subject matter sought to be patented, or

(g)(1)during the course of an interference conducted under section 135 or section 291, another inventor involved therein establishes, to the extent permitted in section 104, that before such person's invention thereof the invention was made by such other inventor and not abandoned, suppressed, or concealed, or (2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). >"When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art." *Brown v. 3M*, 265 F.3d 1349, 1351, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001) (claim to a system for setting a computer clock to an offset time to address the Year 2000 (Y2K) problem, applicable to records with year date data in "at least one of two-digit, three-digit, or four-digit" representations, was held anticipated by a system that offsets year dates in only two-digit formats). See also MPEP § 2131.02.< "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). Note that, in some circumstances, it is permissible to use multiple references in a 35 U.S.C. 102 rejection. See MPEP § 2131.01.

2131.01 Multiple Reference 35 U.S.C. 102 Rejections

Normally, only one reference should be used in making a rejection under 35 U.S.C. 102. However, a 35 U.S.C. 102 rejection over multiple references has been held to be proper when the extra references are cited to:

re Kanter, 399 F.2d 249, 158 USPQ 331 (CCPA 1968) (Process of siliconizing a patentable base material to obtain a patentable product was claimed. Rejection based on prior art teaching the siliconizing process as applied to a different base material was upheld.); Cf. *In re Pleuddemann*, 910 F.2d 823, 15 USPQ2d 1738 (Fed. Cir. 1990) (Methods of bonding polymer and filler using a novel silane coupling agent held patentable even though methods of bonding using other silane coupling agents were well known because the process could not be conducted without the new agent); *In re Kuehl*, 475 F.2d 658, 177 USPQ 250 (CCPA 1973) (Process of cracking hydrocarbons using novel zeolite catalyst found to be patentable even though catalytic cracking process was old. "The test under 103 is whether in view of the prior art the invention as a whole would have been obvious at the time it was made, and the prior art here does not include the zeolite, ZK-22. The obviousness of the process of cracking hydrocarbons with ZK-22 as a catalyst must be determined without reference to knowledge of ZK-22 and its properties." 475 F.2d at 664-665, 177 USPQ at 255.); and *In re Mancy*, 499 F.2d 1289, 182 USPQ 303 (CCPA 1974) (Claim to a process for the production of a known antibiotic by cultivating a novel, unobvious microorganism was found to be patentable.).

2121 Prior Art; General Level of Operability Required to Make a *Prima Facie* Case

PRIOR ART IS PRESUMED TO BE OPERABLE/ ENABLING

When the reference relied on expressly anticipates or makes obvious all of the elements of the claimed invention, the reference is presumed to be operable. Once such a reference is found, the burden is on applicant to provide facts rebutting the presumption of operability. *In re Sasse*, 629 F.2d 675, 207 USPQ 107 (CCPA 1980). See also MPEP § 716.07.

WHAT CONSTITUTES AN "ENABLING DISCLOSURE" DOES NOT DEPEND ON THE TYPE OF PRIOR ART THE DISCLOSURE IS CONTAINED IN

The level of disclosure required within a reference to make it an "enabling disclosure" is the same no matter what type of prior art is at issue. It does not matter whether the prior art reference is a U.S. patent, foreign patent, a printed publication or other. There is no basis in the statute (35 U.S.C. 102 or 103) for discriminating either in favor of or against prior art references on the basis of nationality. *In re Moreton*, 288 F.2d 708, 129 USPQ 227 (CCPA 1961).

2121.01 Use of Prior Art in Rejections Where Operability Is in Question [R-2]

"In determining that quantum of prior art disclosure which is necessary to declare an applicant's invention 'not novel' or 'anticipated' within section 102, the stated test is whether a reference contains an 'enabling disclosure'... ." *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596 (CCPA 1968). *>The disclosure in an assertedly anticipating reference must provide an enabling disclosure of the desired subject matter; mere naming or description of the subject matter is insufficient, if it cannot be produced without undue experimentation. *Elan Pharm., Inc. v. Mayo Foundation for Medical and Education Research*, 346 F.3d 1051, 1054, 68 USPQ2d 1373, 1376 (Fed. Cir. 2003) (At issue was whether a prior art reference enabled one of ordinary skill in the art to produce Elan's claimed transgenic mouse without undue experimentation. Without a disclosure enabling one skilled in the art to produce a transgenic mouse without undue experimentation, the reference would not be applicable as prior art.).< A reference contains an "enabling disclosure" if the public was in possession of the claimed invention before the date of invention. "Such possession is effected if one of ordinary skill in the art could have combined the publication's description of the invention with his [or her] own knowledge to make the claimed invention." *In re Donohue*, 766 F.2d 531, 226 USPQ 619 (Fed. Cir. 1985).

I. 35 U.S.C. 102 REJECTIONS AND ADDITION OF EVIDENCE SHOWING REFERENCE IS OPERABLE

It is possible to make a 35 U.S.C. 102 rejection even if the reference does not itself teach one of ordinary skill how to practice the invention, i.e., how to make or use the article disclosed. If the reference teaches every claimed element of the article, secondary evidence, such as other patents or publications, can be cited to show public possession of the method of making and/or using. *In re Donohue,* 766 F.2d at 533, 226 USPQ at 621. See MPEP § 2131.01 for more information on 35 U.S.C. 102 rejections using secondary references to show that the primary reference contains an "enabling disclosure."

II. 35 U.S.C. 103 REJECTIONS AND USE OF INOPERATIVE PRIOR ART

"Even if a reference discloses an inoperative device, it is prior art for all that it teaches." *Beckman Instruments v. LKB Produkter AB*, 892 F.2d 1547, 1551, 13 USPQ2d 1301, 1304 (Fed. Cir. 1989). Therefore, "a non-enabling reference may qualify as prior art for the purpose of determining obviousness under 35 U.S.C. 103." *Symbol Techs. Inc. v. Opticon Inc.*, 935 F.2d 1569, 1578, 19 USPQ2d 1241, 1247 (Fed. Cir. 1991).

2121.02 Compounds and Compositions — What Constitutes Enabling Prior Art

ONE OF ORDINARY SKILL IN THE ART MUST BE ABLE TO MAKE OR SYNTHESIZE

Where a process for making the compound is not developed until after the date of invention, the mere naming of a compound in a reference, without more, cannot constitute a description of the compound. *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596 (CCPA 1968). Note, however, that a reference is presumed operable until applicant provides facts rebutting the presumption of operatibility. *In re Sasse*, 629 F.2d 675, 207 USPQ 107 (CCPA 1980). Therefore, applicant must provide evidence showing that a process for making was not known at the time of the invention. See the following paragraph for the evidentiary standard to be applied.

A REFERENCE DOES NOT CONTAIN AN "ENABLING DISCLOSURE" IF ATTEMPTS AT MAKING THE COMPOUND OR COMPO-SITION WERE UNSUCCESSFUL BEFORE THE DATE OF INVENTION

When a prior art reference merely discloses the structure of the claimed compound, evidence showing that attempts to prepare that compound were unsuccessful before the date of invention will be adequate to show inoperability. *In re Wiggins,* 488 F.2d 538, 179 USPQ 421 (CCPA 1971). However, the fact that an author of a publication did not attempt to make the compound disclosed, without more, will not overcome a rejection based on that publication. *In re Donohue,* 766 F.2d 531, 226 USPQ 619 (Fed. Cir. 1985) (In this case, the examiner had made a rejection under 35 U.S.C. 102(b) over a publication, which disclosed the claimed compound, in combination with two patents teaching a general process of making the particular class of compounds. The applicant submitted an affidavit stating that the authors of the publication had not actually synthesized the compound. The court held that the fact that the publication's author did not synthesize the disclosed compound was immaterial to the question of reference operability. The patents were evidence that synthesis methods were well known. The court distinguished *Wiggins*, in which a very similar rejection was reversed. In *Wiggins*, attempts to make the compounds using the prior art methods were all unsuccessful.). Compare *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596 (CCPA 1968) (A claim to a compound was rejected over a patent to *De Boer* which disclosed compounds similar in structure to those claimed (obvious homologs) and a process of making these compounds. Applicant responded with an affidavit by an expert named Wiley which stated that there was no indication in the *De Boer* patent that the process disclosed in *De Boer* could be used to produce the claimed compound and that he did not believe that the process disclosed in *De Boe*r could be adapted to the production of the claimed compound. The court held that the facts stated in this affidavit were legally sufficient to overcome the rejection and that applicant need not show that all known processes are incapable of producing the claimed compound for this showing would be practically impossible.).

2121.03 Plant Genetics — What Constitutes Enabling Prior Art

THOSE OF ORDINARY SKILL MUST BE ABLE TO GROW AND CULTIVATE THE PLANT

When the claims are drawn to plants, the reference, combined with knowledge in the prior art, must

§ 2144.09 for examples of reasoning supporting obviousness rejections.

When the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper. *Ex parte Skinner*, 2 USPQ2d 1788 (Bd. Pat. App. & Inter. 1986). A statement of a rejection that includes a large number of rejections must explain with reasonable specificity at least one rejection, otherwise the examiner procedurally fails to establish a *prima facie* case of obviousness. *Ex parte Blanc*, 13 USPQ2d 1383 (Bd. Pat. App. & Inter. 1989) (Rejection based on nine references which included at least 40 prior art rejections without explaining any one rejection with reasonable specificity was reversed as procedurally failing to establish a *prima facie* case of obviousness.).

If the examiner determines there is factual support for rejecting the claimed invention under 35 U.S.C. 103, the examiner must then consider any evidence supporting the patentability of the claimed invention, such as any evidence in the specification or any other evidence submitted by the applicant. The ultimate determination of patentability is based on the entire record, by a preponderance of evidence, with due consideration to the persuasiveness of any arguments and any secondary evidence. *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). The legal standard of "a preponderance of evidence" requires the evidence to be more convincing than the evidence which is offered in opposition to it. With regard to rejections under 35 U.S.C. 103, the examiner must provide evidence which as a whole shows that the legal determination sought to be proved (i.e., the reference teachings establish a *prima facie* case of obviousness) is more probable than not.

When an applicant submits evidence, whether in the specification as originally filed or in reply to a rejection, the examiner must reconsider the patentability of the claimed invention. The decision on patentability must be made based upon consideration of all the evidence, including the evidence submitted by the examiner and the evidence submitted by the applicant. A decision to make or maintain a rejection in the face of all the evidence must show that it was based on the totality of the evidence. Facts established by rebuttal evidence must be evaluated along with the facts on which the conclusion of obviousness was reached, not against the conclusion itself. *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990).

See *In re Piasecki*, 745 F.2d 1468, 223 USPQ 785 (Fed. Cir. 1984) for a discussion of the proper roles of the examiner's *prima facie* case and applicant's rebuttal evidence in the final determination of obviousness. See MPEP § 706.02(j) for a discussion of the proper contents of a rejection under 35 U.S.C. 103.

2143 Basic Requirements of a *Prima Facie* Case of Obviousness

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

2143.01 Suggestion or Motivation To Modify the References [R-2]

THE PRIOR ART MUST SUGGEST THE DESIRABILITY OF THE CLAIMED INVENTION

"There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet,* 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper.). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999).

requirements of 37 CFR 1.97. The requirements as to content are discussed in subsection III.A below. The requirements based on the time of filing the statement are discussed in subsection III.B below. Examiner handling of information disclosure statements is discussed in subsection III.C below. >For discussion of IDS filed electronically (e-IDS) via the Office's Electronic Filing System (EFS), see subsection IV. below.<

Once the minimum requirements of 37 CFR 1.97 and 37 CFR 1.98 are met, the examiner has an obligation to consider the information. Consideration by the examiner of the information submitted in an IDS means nothing more than considering the documents in the same manner as other documents in Office search files are considered by the examiner while conducting a search of the prior art in a proper field of search. The initials of the examiner placed adjacent to the citations on the PTO-1449 or PTO/SB/08A and 08B or its equivalent mean that the information has been considered by the examiner to the extent noted above. ** Information submitted to the Office that does not comply with the requirements of 37 CFR 1.97 and 37 CFR 1.98 will not be considered by the Office but will be placed in the application file.

Multiple information disclosure statements may be filed in a single application, and they will be considered, provided each is in compliance with the appropriate requirements of 37 CFR 1.97 and 37 CFR 1.98. Use of form PTO-1449, "Information Disclosure Citation," or PTO/SB/08A and 08B, "Information Disclosure Statement," is encouraged as a means to provide the required list of information as set forth in 37 CFR1.98(a)(1). Applicants are encouraged to use the USPTO forms when preparing an information disclosure statement. A copy of forms PTO-1449, "Information Disclosure Citation" and PTO/SB/08A and 08B are reproduced at the end of this section to indicate how the forms should be completed. The forms will enable applicants to comply with the requirement to list each item of information being submitted and to provide the Office with a uniform listing of citations and with a ready way to indicate that the information has been considered.

I. IDS IN CONTINUED EXAMINATIONS OR CONTINUING APPLICATIONS

A. IDS That Has Been Considered (1) in the Parent Application, or (2) Prior to the Filing of a Request for Continued Examination (RCE)

1. Continued Prosecution Applications (CPAs) Filed Under 37 CFR 1.53(d) or File Wrapper Continuing (FWC) Applications Filed Under Former 37 CFR 1.62

Information which has been considered by the Office in the parent application of a continued prosecution application (CPA) filed under 37 CFR 1.53(d), or a file wrapper continuing application (FWC) filed prior to December 1, 1997 under former 37 CFR 1.62, will be part of the file before the examiner and need not be resubmitted in the continuing application to have the information considered and listed on the patent.

2. Continuation Applications or Divisional Applications, Filed Under 37 CFR 1.53(b) or Filed Under Former 37 CFR 1.60, or Continuation-In-Part Applications Filed Under 37 CFR 1.53(b)

The examiner will consider information which has been considered by the Office in a parent application when examining (A) a continuation application filed under 37 CFR 1.53(b) or filed under former 37 CFR 1.60, (B) a divisional application filed under 37 CFR 1.53(b) or filed under former 37 CFR 1.60, or (C) a continuation-in-part application filed under 37 CFR 1.53(b). *>A listing of the< information need not be resubmitted in the continuing application unless the applicant desires the information to be printed on the patent.

3. Requests for Continued Examination (RCE) Under 37 CFR 1.114

Information which has been considered by the Office in the application before the filing of a RCE will be part of the file before the examiner and need not be resubmitted to have the information considered by the examiner and listed on the patent.

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Citation: **399 F2d 269**

*55 C.C.P.A. 1493, *; 399 F.2d 269, **;*
*1968 CCPA LEXIS 263, ***; 158 U.S.P.Q. (BNA) 596*

IN RE HERMAN HOEKSEMA

No. 7778

United States Court of Customs and Patent Appeals

55 C.C.P.A. 1493; 399 F.2d 269; 1968 CCPA LEXIS 263; 158 U.S.P.Q. (BNA) 596

Oral argument January 3, 1968 August 8, 1968

PRIOR HISTORY: [*1]**

APPEAL from Patent Office, Serial No. 30,770

DISPOSITION: Reversed.

CASE SUMMARY

PROCEDURAL POSTURE: Appellant petitioned for rehearing of the affirmation of the rejection of its patent application as unpatentable over prior art under 35 U.S.C.S. § 103.

OVERVIEW: Appellant's claim was rejected under 35 U.S.C.S. § 103 as unpatentable over prior art because an earlier patent disclosed a close structural similarity to appellant's chemical compound. Appellant petitioned for rehearing of affirmation of the rejection. The court granted rehearing and reversed because its affirmation was erroneous because appellant had filed an affidavit stating that the earlier patent did not disclose the process for producing the compound. This was legally sufficient to shift the burden of going forward with proof of the claimed invention's obviousness to the patent office because the method for making the compounds was an integral part of the invention as a whole which the court had to consider under 35 U.S.C.S. § 103. The office did not produce such evidence; thus, affirmation of rejection was reversed.

OUTCOME: The court reversed its affirmation of rejection of appellant's chemical compound claim because the patent office did not produce proof that appellant's invention was obvious.

CORE TERMS: compound, invention, patent, obviousness, consisting, preparing, chemical, disclosure, examiner, amino, unpatentable, printed, skill, fermentation, illustration, alkylamino, hydrogen, formula, prima facie, patent-defeating, contemplation, patentable, unobvious, substituted-amino, lower-alkylamino, lower-aralkyl, dialkylamino, lower-alkyl, designation, public policy

LexisNexis(R) Headnotes ◆ Hide Headnotes

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals
Patent Law > Nonobviousness > General Overview

HN1 The method of making the compounds is a relevant fact to be considered in the question of obviousness of the compounds. More Like This Headnote

Patent Law > Nonobviousness > Elements & Tests > Claimed Invention as a Whole

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals

*HN2*In the context of 35 U.S.C.S. § 103, the court is not permitted to fragment a claimed invention in applying that section. The clear mandate of the statute which governs the court's analysis requires that the court consider the invention as a whole in making the determination. More Like This Headnote

Patent Law > Anticipation & Novelty > Fact & Law Issues

Patent Law > Anticipation & Novelty > Elements

Patent Law > Inequitable Conduct > Effect, Materiality & Scienter > General Overview

*HN3*In determining that quantum of prior art disclosure which is necessary to declare an applicant's invention "not novel" or "anticipated" within 35 U.S.C.S. § 102, the stated test is whether a reference contains an "enabling disclosure." More Like This Headnote

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals

Patent Law > Anticipation & Novelty > General Overview

*HN4*Before any publication can amount to a statutory bar to the grant of a patent, its disclosure must be such that a skilled artisan could take its teachings in combination with his own knowledge of the particular art and be in possession of the invention. More Like This Headnote

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals

Patent Law > Nonobviousness > Elements & Tests > General Overview

*HN5*The true test of any prior art relied on to show or suggest that a chemical compound is old, is whether the prior art is such as to place the disclosed "compound" in the possession of the public. More Like This Headnote

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals

*HN6*If the prior art of record fails to disclose or render obvious a method for making a claimed compound, at the time the invention was made, it may not be legally concluded that the compound itself is in the possession of the public. More Like This Headnote

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals

*HN7*The absence of a known or obvious process for making the claimed compounds overcomes a presumption that the compounds are obvious, based on close relationships between their structures and those of prior art compounds. More Like This Headnote

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals

Patent Law > Nonobviousness > Elements & Tests > General Overview

*HN8*35 U.S.C.S. § 101 states, in its preamble, that an applicant is entitled to a patent unless certain patent-defeating provisions are met. More Like This Headnote

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals

Patent Law > U.S. Patent & Trademark Office Proceedings > Examinations > General Overview

*HN9*All of the pertinent evidence should be considered while leaving the primary responsibility for sifting out unpatentable material with the patent office. More Like This Headnote

Patent Law > Nonobviousness > Evidence & Procedure > Presumptions & Proof

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Nonobviousness > Elements & Tests > Claimed Invention as a Whole

HN10↓The burden of going forward with proofs to support its position as to obviousness of the claimed invention shifts to the patent office upon an appellant's filing of an affidavit overcoming reference to prior art. More Like This Headnote

COUNSEL: *Earl C. Spaeth, (Eugene O. Retter, George T. Johannesen,* of counsel) for appellant.

Joseph Schimmel (Jack E. Armore, of counsel) for the Commissioner of Patents.

OPINIONBY: SMITH

OPINION: [270]**

[*1495] Before WORLEY, Chief Judge, and Judges RICH, SMITH, ALMOND, KIRKPATRICK. *

* Senior District Judge, Eastern District of Pennsylvania, sitting by designation.

SMITH, Judge, delivered the opinion of the court:

[1] In our prior consideration of this appeal, we affirmed the decision of the Patent Office Board of Appeals, which had affirmed the examiner's rejection of the sole remaining claim of appellant's application, n1 In re Hoeksema, 54 CCPA 1618, 379 F.2d 1007, 154 USPQ 169 (1967). Because of the continuing importance of the questions involved, and the strong suggestion of error in our earlier opinion, we granted appellant's petition for a rehearing under the provisions of Rule 7 of this court, 55 CCPA - (October 5, 1967).

n1 Claim 1 in Serial No. 30,770, filed May 23, 1960, for "9-D-Psicofuranosylpurine and 6-Substituted Derivatures." Claims 2 and 11-25 stand allowed.

The parties **[***2]** filed new briefs, and the case was reargued on January 3, 1968. Upon reconsideration of our previous decision, we have concluded that our previous decision was erroneous and that a proper resolution of the issues requires that we reverse the decision of the board.

The facts are set forth in our original opinion. We shall assume familiarity with that statement of facts and shall here redevelop only those which we now believe were previously misapprehended or misapplied and require the present decision.

The sole claim on appeal is directed to a chemical compound and reads as follows:

1. An N-psicofuranoside having the formula:

[Graphic omitted. See illustration in original.]

wherein A is selected from the class consisting of hydrogen, the group -XR wherein R is selected from the class consisting of hydrogen, lower-alkyl, and lower-aralkyl, and X is selected from the class consisting of oxygen and sulfur, and the group [Graphic omitted. See illustration in original.] wherein R(2) is selected from the class consisting of hydrogen, lower-alkyl, lower-aralkyl, and lower-aryl, and R(3) is selected from the class consisting of lower-alkyl, lower-aralkyl, and lower-aryl, **[***3]** and R' is selected from **[*1496]** the class consisting of hydrogen, a hydrocarbon carboxylic acid acyl radical containing from two to twelve carbon atoms, inclusive, and a halo-, hydroxy-, lower-alkoxy-, amino-, cyano-, thiocyano-, and nitro-substituted hydrocarbon carboxylic acid acyl **[**271]** radical containing from two to twelve carbon atoms, inclusive.

That claim stands rejected under 35 USC 103 as unpatentable over prior art, on this record limited solely to the De Boer et al. patent n2 (De Boer) which discloses a compound with the structural formula:

n2 Patent No. 3,094,460, issued June 18, 1963 on an application filed January 20, 1959.

[Graphic omitted. See illustration in original.]

As we noted in our original opinion, the controversy here is limited to the substituent A at the 6-position of the purine ring system. Although a compound having De Boer's structure is not included in the appealed claim since A in the claim cannot be an unsubstituted

[Graphic omitted. See illustration in original.]

compound is similar to the structure of appellant's alkylamino and dialkylamino compounds. n3

n3 Appellant, in effect, admits that there is such a "structural similarity" between his claimed compounds and the prior art compounds as to raise an "inference of fact" that they are not patentable within the meaning of 35 USC 103. See In re Papesch, 50 CCPA 1084, 315 F.2d 381, 137 USPQ 43 (1963); In re Victor Mills, 47 CCPA 1185, 281 F.2d 218, 126 USPQ 513 (1960). **[***4]**

Despite this close structural similarity between the De Boer amino compound and the alkylamino and dialkylamino compounds included in the appealed claim, appellant chose not to submit a showing of unexpected properties in his claimed compounds. n4 Appellant asserted that his compounds were unobvious and patentable without such a showing. He urged that De Boer does not teach one of ordinary skill in the art how to make appellant's claimed compounds, and the examiner did not cite any other reference telling how they might be made. Therefore, in appellant's view, his claimed compounds are not **[*1497]** in possession of the public, In re Brown, 51 CCPA 1254, 329 F.2d 1006, 141 USPQ 245 (1964). n5

n4 Such a showing often has been treated by this court as overcoming a case of "prima facie obviousness" or the "inference of fact" that the compounds are obvious. See, e.g., In re Papesch, supra note 3 and cases cited therein.

n5 For the applicability of In re Brown, supra, to other factual contexts, see In re Bird, 52 CCPA 1290, 1294, 344 F.2d 979, 982, 145 USPQ 418, 420 (1965); In re Sheppard, 52 CCPA 859, 864, 339 F.2d 238, 242, 144 USPQ 42, 45 (1964); Dix-Seal Corp. v. New Haven Trap Rock Co., 236 F.Supp. 914, 921, 144 USPQ 57, 64 (D.C. Conn. 1964). **[***5]**

In support of his position, appellant submitted an affidavit by Dr. Paul F. Wiley relating to the unavailability to the public of processes for preparing appellant's alkylamino and dialkylamino compounds. n6 Dr. Wiley's qualifications **[**272]** and competence as an expert to state facts and opinion in this area of chemistry were not challenged.

n6 After setting forth his qualifications and stating that he read and understood both appellant's application and the prior art patent, Dr. Wiley stated:

THAT, 6-amino-9-D-psicofuranosylpurine is a systematic name for "psicofuranine" which is disclosed in column 6, lines 46 - 62 of the aforesaid patent;

THAT, according to the aforesaid patent, 6-amino-9-D-psicofuranosylpurine is produced by a fermentation process involving the action of a specific microorganism, S. hygroscopicus var. decoyinine, in certain acqueous nutrient media;

THAT, there is no indication in the aforesaid patent [De Boer] that the aforesaid fermentation process could be used to produce 6-lower-alkylamino-9-D-psicofuranosylpurines, 6-di-lower-alkylamino-9-D-psicofuranosylpurines, or other 6-substituted-amino-9-D-psicofuranosylpurines;

THAT, he does not believe the aforesaid fermentation process could be adapted to the production of the aforesaid 6-lower-alkylamino-9-D-psicofuranosylpurines, 6-dilower-alkylamino-9-D-psicofuranosylpurines, or other 6-substituted-amino-9-D-psicofuranosylpurines;

THAT, the aforesaid 6-amino-9-psicofuranosylpurine could not be transformed by direct chemical substitution of the 6-amino group to a 6-lower-alkylamino-9-D-psicofuranosylpurine, a 6-di-lower alkylamino-9-D-psicofuranosylpurine, or other 6-substituted-amino-9-D-psicofuranosylpurines, and that such transformations could be carried out only by a complex multi-step procedure such as that described in the aforesaid patent application Serial No. 30,770. [Emphasis added.] **[***6]**

Regarding the Wiley affidavit, the examiner stated, in his Answer:

The affidavit * * * does not appear to be pertinent to the claim now on appeal because it is directed to the processes by which the De Boer et al. and appellant's compounds are prepared, and shows nothing unobvious for the instantly claimed compound.

Concerning the Wiley affidavit, the board cited a statement of this court in In re Riden, 50 CCPA 1411, 318 F.2d 761, 138 USPQ 112 (1963), to the effect that *HN1*"the method of making the compounds is a relevant fact to be considered in the question of obviousness of the compounds," 50 CCPA at 1415, 318 F.2d at 764, 138 USPQ at 114-115. But the board continued:

* * * This may be so but it is only one factor and, in our opinion, should never be the overriding one which appellant is here, in effect, urging.

Appellant states the first of two central questions to be decided in this rehearing as follows:

(1) Appellant will admit his compounds are obvious and unpatentable if an obvious process is available to make them. Does it follow then that appellant's compounds are unobvious and patentable if an obvious process is not available to make them?

[*1498] [2] **[***7]** Within this context, appellant simplifies that question to: Is process obviousness relevant in deciding compound obviousness? n7

n7 To this extent, appellant has misstated his argument. That process obviousness is relevant in this context is clear from In re Riden, supra. See also In re Chapman, 53 CCPA 978, 357 F.2d 418, 148 USPQ 711 (1966); In re Burt, 53 CCPA 929, 356 F.2d 115, 148 USPQ 548 (1966); In re Schechter, 40 CCPA 1009, 205 F.2d 185, 98 USPQ 144 (1963).

We think appellant really means to say that the question is whether a claimed compound may be said to be legally obvious when no process for making that compound is shown in the prior art relied upon to establish legal obviousness under section 103.

The solicitor responds to the latter characterization of the question in the affirmative, pointing out that the first question bears on the principle implicit in In re Brown, supra, that claimed compounds not distinguished in their properties over closely related prior art compounds are unpatentable thereover where the claimed compounds would be "in possession of the public" in that a process for preparing them would be obvious to those of ordinary skill in the art. **[***8]**

In addition, the solicitor now refers to our prior opinion in which we noted that the facts in this case are closely analogous to those of In re Riden, supra, where we stated that the fact that the method of making the claimed compound is relevant, 54 CCPA at 1623, 379 F.2d at 1010, 154 USPQ at 172.

A recurring problem of analysis which confronted us as we prepared our previous opinion, and which still confronts us after the rehearing, has its genesis in a proper understanding of the issue as framed by appellant. In effect, appellant agrees that since the claimed **[**273]** product is a homolog of a known compound, it would be prima facie "obvious" under 35 USC 103. But this agreement is conditioned on the proviso that there is in the prior art an "obvious" process by which to make that compound.

[3] *HN2*↑In the context of section 103, we are not permitted to fragment a claimed invention in applying that section. The clear mandate of the statute which governs our analysis requires that we consider the invention as a whole in making the determination.

[4] Thus, as we apply the statute to the present invention, we must ask first, what is the invention as a whole? Necessarily, **[***9]** by elementary patent law principle, it is the claimed compound, but, so considered, unless there is some known or obvious way to make the compound, the invention is nothing more than a mental concept expressed in chemical terms and formulae on a paper.

We are certain, however, that the invention as a whole is the claimed compound and a way to produce it, wherefore appellant's argument has substance. There has been no showing by the Patent Office in this record that the claimed compound can exist because there is no showing of a known or obvious way to manufacture it; hence, it seems to **[*1499]** us that the "invention as a whole," which section 103 demands that we consider, is not obvious from the prior art of record.

While there are valid reasons based in public policy as to why this defect in the prior art precludes a finding of obviousness under section 103, In re Brown, supra, its immediate significance in the present inquiry is that it poses yet another difference between the claimed invention and the prior art which must be considered in the context of section 103. So considered, we think the differences between appellant's invention as a whole and the prior art are **[***10]** such that the claimed invention would not be obvious within the contemplation of 35 USC 103.

[5] While 35 USC 102 is not directly involved in the issue on review, the conditions for patentability, novelty and loss of right to patent, there stated, may have relevance as to the disclosure which must be found in the prior art to find obviousness of an invention under section 103. HN3In determining that quantum of prior art disclosure which is necessary to declare an applicant's invention "not novel" or "anticipated" within section 102, the stated test is whether a reference contains an "enabling disclosure," in the present context, a process by which the claimed compound could be made. In In re Le Grice, 49 CCPA 1124, 301 F.2d 929, 133 USPQ 365 (1962), we observed that the resolution of this issue required us to determine whether, as a matter of law, a reference without such a disclosure constituted a statutory time bar to an applicant's right to a patent. There, the issue was founded on 35 USC 102(b), not 103, but our conclusions have a certain pertinence here. We concluded, id. at 1134, 301 F.2d at 936, 133 USPQ at 372:

We think it is sound law, consistent with the public policy **[***11]** underlying our patent law, that HN4before any publication can amount to a statutory bar to the grant of a patent, its disclosure must be such that a skilled artisan could take its teachings in combination with his own knowledge of the particular art and be in possession of the invention. * * *

In In re Brown, supra, this court discussed In re Von Bramer, 29 CCPA 1018, 127 F.2d 149, 53 USPQ 345 (1942), commenting that that opinion should not be construed to encompass what had come to be called the "Von Bramer doctrine." There we stated, 51 CCPA at 1257, 329 F.2d at 1009, 141 USPQ at 247:

* * * This doctrine which appears to have resulted from In re Von Bramer et al., supra, seems over a period of years to have been tailored in some quarters to a principle which defeats the novelty of a chemical compound on the basis of a mere printed conception or a mere printed contemplation of a **[**274]** chemical "compound" irrespective of the fact that the so-called "compound" described in the reference is not in existence or that there is no process shown in the reference for preparing the compound, or that there is no process **[*1500]** known to a person having ordinary skill in the relevant **[***12]** art for preparing the compound. In other words, a mere formula or a mere sequence of letters which constitute the designation of a "compound," is considered adequate to show that a compound in an application before the Patent Office, which compound is designated by the same formula or the same sequence of letters, is old. We do not think that the Von Bramer case should be so construed. [Emphasis added.]

* * *

To the extent that anyone may draw an inference from the Von Bramer case that the mere printed conception or the mere printed contemplation which constitutes the designation of a "compound" is sufficient to show that such a compound is old, regardless of whether the compound is involved in a 35 USC 102 or 35 USC 103 rejection, we totally disagree. * * * [Footnotes omitted.]

We concluded, relying on In re Le Grice, supra, and E. I. DuPont de Nemours & Co. v. Ladd, 328 F.2d 547, 140 USPQ 297 (D.C. Cir. 1964), that HN5the "true test of any prior art relied on to show or suggest that a chemical compound is old, is whether the prior art is such as to place the disclosed 'compound' in the possession of the public." 51 CCPA at 1259, 329 F.2d at 1011, 141 USPQ at 249.

While **[***13]** In re Le Grice was bottomed on an issue arising under 35 USC 102 where the reference was a "printed publication," that test, in our view, is also properly applicable to issues arising under 35 USC 103. See In re Brown, supra (pertinent portion quoted above); Deutsche Gold-Und Silber-Scheideanstalt v. Commissioner, 251 F.Supp. 624, 629-630, 148

USPQ 412, 416 (D.D.C. 1966), affirmed, 397 F.2d 656, 157 USPQ 549 (D.C.Cir. 1968).

[6] Thus, upon careful reconsideration it is our view that HN6 if the prior art of record fails to disclose or render obvious a method for making a claimed compound, at the time the invention was made, it may not be legally concluded that the compound itself is in the possession of the public. n8 In this context, we say that HN7 the absence of a known or obvious process for making the claimed compounds overcomes a presumption that the compounds are obvious, based on close relationships between their structures and those of prior art compounds.

n8 In Phillips Petroleum v. Ladd, 219 F.Supp. 366, 138 USPQ 421 (D.C.C. 1963), in considering a rejection arising under 35 USC 102, the District Court agreed with this court that the mere naked statement of the invention does not put anyone in possession of the invention. That court was careful to note that no process had been shown in the reference for preparing the compound and that no process was known to one of ordinary skill in the art for preparing the compound.

In Ex parte Wall, 156 USPQ 95 (P.O. Bd. App. 1964), the board considered a rejection under 35 USC 102 of a claim reading "Perfluorostyrene." In reversing the examiner, the board commented that the examiner did not contend that the reference disclosed how perfluorostyrene is made, nor did he point to any extraneous evidence which would indicate that those skilled in the art knew how to make that compound. **[***14]**

The second aspect of the questions presented by this rehearing involves **[*1501]** the issue of whether the burden is on the Patent Office to provide the evidence on which to predicate process obviousness. HN8

35 USC 101 states, in its preamble, that an applicant is entitled to a patent unless certain patent-defeating provisions are met. The substantive patent-defeating provisions are encompassed in 35 USC 100-103.

[7] As we have stated, the Patent Office search resulted in citation of the De Boer reference which, under the prevailing law, rendered appellant's claimed compounds prima facie obvious. In **[**275]** other words, its citation shifted to appellant the burden of going forward with contrary evidence. Appellant filed the affidavit of Dr. Wiley which points out as a fact that De Boer - the only reference being relied on - does not disclose a process for producing the different compounds here claimed.

We think that portion of the Wiley affidavit set forth, supra note 6, states facts which were legally sufficient to overcome the position of the Patent Office as to the legal effect under section 103 of the De Boer reference. n9 Appellant's responsibility to overcome **[***15]** this reference as a "patent-defeating" reference under section 103 at that point in the prosecution was only to overcome De Boer as a reference pertinent to the issue of obviousness under section 103.

n9 We think this approach to be eminently fair to all parties and in accord with the opinion of the Supreme Court in Graham, in its requiring that HN9 all of the pertinent evidence be considered while yet leaving the primary responsibility for sifting out unpatentable material with the Patent Office, Graham v. John Deere Co., 383 U.S. 1 at 18, 148 USPQ at 467.

It would be practically impossible for an applicant to show that all known processes are incapable of producing the claimed compound.

We think the Wiley affidavit is clearly sufficient for this purpose. The affidavit points out that there is no indication in the De Boer patent that the fermentation process used to produce De Boer's compounds could be used to produce appellant's compounds. Since we are of the view that the method for making the compounds is an integral part of the "invention as a whole" which we must consider under section 103, we conclude that *HN10*the burden of going forward with proofs to support its position **[***16]** as to obviousness of the claimed invention shifted to the Patent Office upon appellant's filing of the Wiley affidavit.

The failure of the Patent Office to produce such evidence requires that the decision of the board be reversed.

WORLEY, C.J., did not participate.

DISSENTBY: KIRKPATRICK

DISSENT: KIRKPATRICK, Judge, dissenting.

I am unable to agree with the result reached by the majority. The reasons for my dissent appear in the overruled opinion In re Hoeksema, 54 CCPA 1618, 379 F.2d 1007, 154 USPQ 169 (1967).

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Service: **Get by LEXSEE®**
Citation: **568 F2d 1349**

*568 F.2d 1349, *; 1978 CCPA LEXIS 346, **;*
196 U.S.P.Q. (BNA) 465

IN THE MATTER OF THE APPLICATION OF GAYLE D. EDWARDS, DORIS M. RICE and ROBERT L. SOULEN

No. 77-532

UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

568 F.2d 1349; 1978 CCPA LEXIS 346; 196 U.S.P.Q. (BNA) 465

January 12, 1978, Decided

SUBSEQUENT HISTORY: [1]**

As Amended January 18, 1978.

PRIOR HISTORY: Serial No. 110,599.

CASE SUMMARY

PROCEDURAL POSTURE: Appellant inventors sought review from a judgment of the Patent and Trademark Office Board of Appeals, affirming the final rejection of appellant's application for Water Insoluble Nitrogen-Containing Polyols patent.

OVERVIEW: Appellants applied for Water Insoluble Nitrogen-Containing Polyols patent. After the Patent and Trademark Office Board of Appeals affirmed the final rejection of the patent, appellant sought review. The court held that the issue on appeal was whether the application complied with the written description requirement under the patent laws. The burden rested on the patent officer to show why the claimed invention was not described sufficiently. The court reversed because the officer in fact argued nothing more than lack of literal support. The court concluded that an adequate description of the reactions involved comprised an adequate description of the claimed compound.

OUTCOME: The court reversed the judgment because the burden rested on the patent officer to show why the claimed invention was not described sufficiently, and the officer in fact argued nothing more than lack of literal support.

CORE TERMS: compound, oxide, polyol, mole, propylene, ratio, invention, molar, disclosure, phenol, skilled, phenolic, alkylene, written description, diethanolamine, predominant, formaldehyde, reactant, filing date, propoxylation, pentol, disclose, hydrogen, hydroxyl group, grandparent, embodiment, mixture, alkanolamine, examiner, reacted

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Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals
Patent Law > Claims & Specifications > Enablement Requirement > General Overview
Patent Law > Claims & Specifications > Description Requirement > General Overview

HN1 The function of the description requirement is to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him. To comply with the description requirement it is not necessary that the application describe the claimed invention in ipsis verbis; all that is required is that it reasonably convey to persons skilled in the art that, as of the filing date thereof, the inventor had possession of the subject matter later claimed by him. More Like This Headnote

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals
Patent Law > Claims & Specifications > Description Requirement > General Overview
*HN2*The invention claimed does not have to be described in ipsis verbis in order to satisfy the description requirement of 35 U.S.C.S. § 112. More Like This Headnote

COUNSEL: James L. Bailey, Houston, Texas, attorney of record, for appellants.

Joseph F. Nakamura, Washington, D.C., for the Commissioner of Patents, Fred W. Sherling, Washington, D.C., of counsel.

OPINIONBY: LANE

OPINION: [*1349]

LANE, Judge

This appeal is from the decision of the Patent and Trademark Office (PTO) Board **[*1350]** of Appeals (board) affirming the final rejection of claim 3, the sole claim in application serial No. 110,599, filed January 28, 1971, entitled "Water Insoluble Nitrogen-Containing Polyols." n1 We reverse.

- - - - - - - - - - - - - - Footnotes - - - - - - - - - - - - - - -

n1 The application is a continuation-in-part of parent application serial No. 682,560, filed November 13, 1967, which, in turn, is a continuation-in-part (the examiner had required it to be denominated as such and appellants, while referring to it below as a continuation, have, in their brief before us, referred to it as a continuation-in-part) of grandparent application serial No. 288,474, filed June 17, 1963.

- - - - - - - - - - - - End Footnotes- - - - - - - - - - - - - -

The Invention **[**2]**

Appellants' invention is directed to a water-insoluble polyol (a poly-hydroxyl compound) which has sufficient self-catalytic activity to react, without the need of extraneous catalysts, with organic polyisocyanates to form rigid polyurethane foams. It is asserted that the foams produced from the polyols of the present invention are characterized by greater ease of fire retardancy and good dimensional strength when extraneous fire retardants are employed. Claim 3, the sole claim on appeal, reads as follows:

3. A water-insoluble polyol having the property of self-catalyzing reaction with organic polyisocyanates to form rigid polyurethane foam said polyol having the formula

[Grapic omitted. See illustration in original.]

As will become evident below, it is essential that the two reactions required to produce the claimed polyol be described. In the first reaction, which can generally be described as a Mannich reaction, n2 para-nonylphenol, diethanolamine, and formaldehyde are reacted in a molar ratio of 1:2:2; the predominant component of the resulting MRP will be a pento (a compound with five hydroxyl groups). The second reaction, which appellants denominate as a propoxylation **[**3]** reaction, involves reacting propylene oxide with the MRP in a molar ratio of 3:1. The predominant product of this reaction will be the claimed compound, viz., a pentol with three degrees of propoxylation. n3

- - - - - - - - - - - - - - Footnotes - - - - - - - - - - - - - - -

n2 The Mannich reaction can be generalized as the linking of a carbanion site (enolate or phenolate) with an aldehyde and an amine. The following is the general reaction scheme:

[GRAPHIC OMITTED. SEE ILLUSTRATION IN ORIGINAL.]

Hereinafter, the product of this reaction will generally be referred to as the MRP (Mannich reaction product).

n3 The product will, in reality, be a mixture of polyols each having various degrees of propoxylation; the predominant component will, however, be the claimed polyol.

- - - - - - - - - - - - End Footnotes- - - - - - - - - - - - - -

Prosecution History and the Rejection

The examiner finally rejected claim 3 on three separate grounds: (1) under 35 U.S.C. § 112, second paragraph, as being indefinite; (2) under 35 U.S.C. § 103, as being obvious over Bruson et al., U.S. Patent No. 2,998,452, issued August 29, 1961; and **[**4]** (3) under 35 U.S.C. § 102(b), as being anticipated by Edwards et al., U.S. Patent No. 3,297,597, issued January 10, 1967, on an application filed May 23, 1966; the grandparent of this application is serial No. 288,474, filed June 17, 1963, which is the same application from which appellants' application originated (i.e., appellants' grandparent application). With respect to the § 102(b) rejection, the examiner was of the opinion that neither the grandparent nor parent applications provided a written description (35 U.S.C. § 112, first paragraph) of the claimed compound; consequently, appellants' claim that they were entitled to their earlier filing dates under 35 U.S.C. § 120 was denied. By restricting appellants to their actual filing date (January 28, 1971), Edwards et al. (which issued January 10, 1967) constituted a statutory bar. **[*1351]**

The board reversed the first two grounds of rejection but affirmed the § 102(b) rejection. Since the parent application was filed less than one year after the Edwards et al. patent issued, the board correctly concluded that if appellants were entitled to rely on its filing date, Edwards et al. (same inventive entity as appellants) **[**5]** would be removed as a reference under § 102(b). In view of appellants' concession that Edwards et al. did, in fact, disclose the claimed polyol, the sole remaining issue was whether the parent application provided a written description (35 U.S.C. 112, first paragraph) of the claimed polyol. Concluding that it did not, the board stated:

[There] is no description in said parent of the invention claimed in the present case. The only disclosure of nonyl phenol (required by claim 3 as the phenolic component) appears... with about twenty-five other phenols. While it might be obvious to combine... [this] disclosure... and Examples III or VIII, [that is to say] select nonyl phenol out of a list of twenty-five phenols, and then combine with propylene oxide in an amount sufficient to obtain the pentol of claim 3, we cannot agree that such selection and combination is equivalent to a "written description" of the claimed invention.

We note that a recent line of C.C.P.A. cases have significantly tightened up on the application of the "written description" requirement of 35 U.S.C. 112, first paragraph; see In re Ruschig, 54 C.C.P.A. 1551, 379 F.2d 990, 154 U.S.P.Q. (BNA) 118 (1967); **[**6]** Fields et al v. Conover et al, 58 C.C.P.A. 1366, 433 F.2d 1386, 170 U.S.P.Q. (BNA) 276, 279-80 (1971) and In re Smith, 458 F.2d 1389, 173 U.S.P.Q. (BNA) 679, 683 (C.C.P.A. 1972). [Emphasis in original.]

Issue

The dispositive issue is whether appellants' parent application, serial No. 682,560, filed November 13, 1967, complies with the written description requirement of 35 U.S.C. 112, first paragraph, vis-a-vis the subject matter of the appealed claim; if it does, then the claim is entitled to the filing date of the parent application under 35 U.S.C. 120, In re Smith, 458 F.2d 1389, 59 C.C.P.A. 1025, 173 U.S.P.Q. (BNA) 679 (C.C.P.A. 1972), and Edwards et al. is removed as a reference.

OPINION

While appellants argue that both the parent and grandparent applications provide an adequate written description of the claimed compound, in our view it is unnecessary to decide whether the grandparent application complies with the description requirement. Appellants filed their parent application within one year of the effective date (issue date) of the only reference - their own patent, and, as such, are within the one-year grace period allowed by § 102(b). Cf. In re Gibbs, 437 **[**7]** F.2d 486, 58 C.C.P.A. 901, 168 U.S.P.Q. (BNA) 578 (1971).

Turning to the parent application, appellants assert that it, by virtue of providing an adequate written description of the aforementioned reactions, provides an adequate written description of the claimed polyol. That these reactions will produce, as the predominant product, the claimed polyol, is not in dispute. The board, however, took the position that the parent does not provide an adequate description of the two reactions; specifically, that it provides neither direction for selecting, as the phenolic reactant, para-nonylphenol, nor direction for choosing a propylene oxide/MRP molar ratio of 3:1.

HN1↑The function of the description requirement is to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him. E.g., In re Blaser, 556 F.2d 534, 194 U.S.P.Q. (BNA) 122 (C.C.P.A. 1977); In re Wertheim, 541 F.2d 257, 191 U.S.P.Q. (BNA) 90 (C.C.P.A. 1976); In re Smith & Hubin, 481 F.2d 910, 178 U.S.P.Q. (BNA) 620 (C.C.P.A. 1973). To comply with the description requirement it is not necessary that the application describe the claimed invention **[**8]** in **[*1352]** ipsis verbis, In re Lukach, 442 F.2d 967, 58 C.C.P.A. 1233, 169 U.S.P.Q. (BNA) 795 (1971); all that is required is that it reasonably convey to persons skilled in the art that, as of the filing date thereof, the inventor had possession of the subject matter later claimed by him. See In re Driscoll, 562 F.2d 1245, 195 U.S.P.Q. (BNA) 434 (C.C.P.A. 1977). In the context of the present case, this translates into whether the parent application provides adequate direction which reasonably leads persons skilled in the art to the later claimed compound. See Flynn v. Eardley, 479 F.2d 1393, 178 U.S.P.Q. (BNA) 288 (C.C.P.A. 1973). By the very nature of this inquiry, each case turns on its own specific facts. See In re Driscoll, supra.

As the board apparently recognized, the description in the parent is not intrinsically defective merely because appellants chose to describe their claimed compound by the process of making it; our primary concern is whether the description requirement has been complied with, not the mode selected for compliance. Cf. In re Smith & Hubin, 481 F.2d at 914, 178 U.S.P.Q. (BNA) at 624. It is undisputed that the aforementioned reactions will inherently **[**9]** produce, as the predominant component, the claimed compound. Further, the parent discloses that:

Although it is within the scope of the present invention to separate the crude... [MRP] by conventional means into specific components or fractions, it is a feature of the present invention that the entire crude Mannich reaction product may be used as such without attempting to isolate the individual components thereof. [Emphasis added.]

The parent application, therefore, recognizes that, if desired, conventional means can be used to separate components of the MRP and, ostensibly, of the final product. While it is true, as stated in the dissenting opinion, that in the preferred embodiment the parent does not separate the components, this does not negate the express disclosure that such separation is "within the scope" of the parent invention; if such express language does not evidence "possession," then nothing does. Thus, on the facts of this case, an adequate description of the aforementioned reactions is, concomitantly, an adequate description of the claimed compound. This should not be construed as meaning that if an application adequately describes a process which, inherently, **[**10]** will produce a compound, then it necessarily adequately describes the compound: Each case must be decided on its own facts.

Example III, referred to by the board, discloses reacting phenol, diethanolamine, and formaldehyde in a molar ratio of 1:2:2; propylene oxide is then reacted with the resulting MRP in a molar ratio of 4.01:1. With respect to example III, we have noted that in their briefs, both appellants and the solicitor indicate that example III uses 3.6 moles of propylene oxide per mole of MRP; this is incorrect. Example III reacts 21.7 moles of propylene oxide with 5.41 moles of MRP, thus giving a molar ratio of 4.01:1. Original claim 2 of the parent application, which is part of the original disclosure, In re Gardner, 475 F.2d 1389, 177 U.S.P.Q. (BNA) 396, rehearing denied, 480 F.2d 879, 178 U.S.P.Q. (BNA) 149 (C.C.P.A. 1973), and to which the board made no reference, claims a polyol produced by reacting 1-7 moles of propylene oxide with one mole of the MRP of phenol or nonylphenol, an alkanolamine, and formaldehyde, reacted in a molar ratio of from 1:1:1 to about 1:3:3. The alkanolamine is selected from alkanolamines having the formulae:

[Grapic omitted. See **[**11]** illustration in original.]

where R is hydrogen or C1-C4 alkyl, R' is hydrogen, C1-C4 alkyl or -(CHR)n-OH, and n is a positive integer having a value of 2 to 5. Diethanolamine is a species which falls within these generic formulae. Moreover, of the eight working examples in the parent which describe making various polyols, all eight use diethanolamine as a reactant. This provides adequate direction for selecting diethanolamine as the alkanolamine in claim 2. Thus, claim 2 recites a process for producing a genus of compounds which includes both the predominant compound **[*1353]** produced by example III and the claimed compound. More importantly, by claiming the phenolic reactant as a Markush group consisting of phenol or nonylphenol, it is generally understood that appellants are asserting that these two members are alternatively usable for the purposes of the invention, and therefore, regardless of which is chosen, the resulting compound produced by the overall process will exhibit the disclosed utility. See In re Driscoll, supra; see generally In re Skoll, 523 F.2d 1392, 1397, 187 U.S.P.Q. (BNA) 481, 484-85 (C.C.P.A. 1975). We view this as providing adequate direction for **[**12]** those skilled in the art to substitute nonylphenol for phenol in example III. The solicitor concedes as much in his brief; to conclude otherwise would make the statement in In re Lukach, 442 F.2d at 969, 58 C.C.P.A. at 1235, 169 U.S.P.Q. (BNA) at 796, that "the *HN2*invention claimed does not have to be described in ipsis verbis in order to satisfy the description requirement of § 112," meaningless.

Turning to the propylene oxide/MRP mole ratio in the second reaction, the solicitor's position is that, at best, the parent application describes the use of from 1 to 5 moles of propylene oxide per mole of MRP, and that "there is no specific teaching of... reducing the amount of propylene oxide to exactly 3 moles as required by the claimed compound." At oral argument, appellants asserted that while a propylene oxide/MRP molar ratio of 3 would, of course, produce the claimed compound, a somewhat larger ratio, such as the 3.6 used in example III, would also produce the claimed compound. As was previously shown, example III does not disclose the use of a molar ratio of 3.6. Moreover, in their brief before us, appellants stated that a molar ratio of 3 is required to produce the claimed compound. **[**13]** Therefore, for purposes of this appeal, we will assume that exactly 3 moles of propylene oxide per mole of MRP is required to produce the compound of appealed claim 3 (the board, in reversing the § 103 rejection over Bruson et al., and the solicitor also stated that 3 moles is required).

To determine whether the parent application provides adequate direction for using the required propylene oxide/MRP molar ratio, an understanding of the underlying reactions is essential. Broadly stated, the parent application discloses first reacting a phenolic compound with an alkanolamine and formaldehyde, in molar ratios of from 1:1:1 to about 1:3:3, to produce an MRP. The resulting MRP potentially can contain three different types of reactive positions: phenolic hydroxyl group, free amino hydrogen atom, and primary hydroxyl group. In the second reaction, alkylene oxide (propylene oxide is disclosed as being preferred) will react with any of these three positions. The molar ratio used in the first reaction will determine whether the MRP is a triol, pentol, etc.; the molar ratio used in the second reaction will determine the degrees of propoxylation of the final product.

Applying this **[**14]** to example III, since the first reaction uses a molar ratio of 1:2:2 (phenol: diethanolamine: formaldehyde), the predominant MRP and the predominant final compound, like the claimed compound, will be a pentol; however, since example III uses a propylene oxide/MRP molar ratio of 4.01:1, the pentol will have four degrees of propoxylation, whereas the claimed pentol has three degrees of propoxylation. With respect to the degree of propoxylation, the parent application discloses that:

In accordance with the present invention, the Mannich reaction product is reacted with an alkylene oxide to provide the final polyol. The nitrogen present in the Mannich condensate [MRP] has sufficient catalytic activity to promote the reaction of one mol of the alkylene oxide with each free amino hydrogen atom and phenolic and primary hydroxyl group and no additional catalyst is needed... For example, seven mols [the stoichiometric amount] of propylene oxide will add to the Mannich product prepared from a molar ratio of 1:3:3 of phenol, diethanolamine and formaldehyde to give a heptol...

* * * **[*1354]**

It is, of course, possible to add less than one mol of alkylene oxide per free phenolic **[**15]** and primary hydroxyl group in the Mannich condensation product. The minimum desirable amount of alkylene oxide is one mol per free amino hydrogen atom and phenolic hydroxyl group.... Generally, more than the minimum amount of alkylene oxide is used to obtain a product having a lower hydorxyl [sic, hydroxyl] number and lower viscosity. For example, a desirable product is that obtained by the addition of five mols of propylene oxide (rather than the maximum of seven or minimum of one) to the heptol obtained by the Mannich condensation of phenol, formaldehyde and diethanolamine in a molar ratio of 1:3:3. [Emphasis added.]

The first reaction in example III, as well as the first reaction required to produce the polyol of appealed claim 3, will produce, as the predominant MRP, a compound which has one phenolic hydroxyl group, no free amino hydrogen atoms, and four primary hydroxyl groups. With this in mind, we believe the above quoted disclosure would provide those skilled in the art with adequate direction for concluding that, in example III, from 1 (but preferably more than 1) to

5 moles of propylene oxide can be reacted with each mole of MRP and that, most importantly, the **[**16]** polyol produced will have the disclosed utility; ergo, it provides adequate direction for using three moles of propylene oxide in example III.

When viewed in the context of what the parent application actually describes, the PTO has, in effect, done nothing more than argue lack of literal support. The burden of showing that the claimed invention is not described in the application rests on the PTO in the first instance, and it is up to the PTO to give reasons why a description not in ipsis verbis is insufficient. In re Salem, 553 F.2d 676, 682, 193 U.S.P.Q. (BNA) 513, 518 (C.C.P.A. 1977); In re Wertheim, 541 F.2d at 265, 191 U.S.P.Q. (BNA) at 98. Stating, as the board did, that in a recent line of cases this court has "significantly tightened up" on the written description requirement, is no substitute for such reasons. Parenthetically, with respect to the board's perception of this court's past cases, suffice it to say that each case must be decided on its own facts, see, e.g., In re Driscoll, supra, and that precedential value of prior cases is, therefore, extremely limited.

In conclusion, we hold that, as a factual matter, the parent application, taken as a whole, reasonably **[**17]** leads persons skilled in the art to the reaction of para-nonylphenol, diethanolamine, and formaldehyde, in a molar ratio of 1:2:2, and to the reaction of propylene oxide with the resulting MRP, in a molar ratio of 3:1, and, concomitantly, to the claimed compound. Accordingly, since claim 3 is therefore entitled to the benefit of the filing date of the parent application, we reverse the § 102(b) rejection of this claim.

REVERSED.

DISSENTBY: MILLER

DISSENT: MILLER, Judge, dissenting.

As the majority opinion recognizes, the function of the description of the invention requirement of 35 U.S.C. § 112, first paragraph, is to insure that an inventor had possession of the claimed subject matter as of the filing date of his application.

Appellants' parent application states that their invention involves "a new class of polyols"; also, it teaches use of the "entire crude Mannich reaction product" ("without attempting to isolate the individual components thereof") as the preferred embodiment of the invention in the further reaction with alkylene oxide to form polyol compounds within that class. From this disclosure, I am persuaded that one skilled in the art would conclude that appellants **[**18]** were not concerned with any specific polyol compound. Indeed, practice of the preferred embodiment of the invention would yield mixtures of polyol compounds. n1 (This does not ignore the statement in appellants' parent application that it is within the scope of the invention to separate the crude **[*1355]** reaction product. However, merely being "within the scope of the invention" provides no guidance to convey clearly to one skilled in the art that appellants were in possession of the presently claimed subject matter whereas; a preferred embodiment is a reliable guide, as the majority opinion appears to acknowledge.)

- - - - - - - - - - - - - - Footnotes - - - - - - - - - - - - - -

n1 It should be noted that claim 1 (also dependent claim 2), for example, recites "polyol." However, the claims actually are to polyol compounds.

- - - - - - - - - - - - End Footnotes- - - - - - - - - - - - -

I do not see how the majority can properly conclude that, "on the facts of this case, an adequate description of the... reactions [Mannich reaction and further reaction with alkylene oxide] is, concomitantly, an adequate description of the claimed **[**19]** compound," considering that the preferred embodiment in the parent application would yield an almost infinite number of different mixtures of polyol compounds. At best, n2 one of ordinary skill in the art, looking at the parent's claim 2 and example III on which the majority relies, would only be guided to a mixture of polyol compounds - not to the specific claimed polyol compound. n3 Nor can I accept the majority's conclusion that disclosure of from 1 to 5 moles "provides adequate direction [to one skilled in the art] for using three moles of propylene oxide in example III." There is nothing in appellants' parent application that would lead one to select 3 moles, rather than 1, 2, 4, 5, or the fractions thereof. The majority's assertion that "we will assume that exactly 3 moles of propylene oxide per mole of MRP is required to produce the compound of appealed claim 3" has no evidentiary support in the record. n4

- - - - - - - - - - - - - - Footnotes - - - - - - - - - - - - - - -

n2 Also noteworthy is the lack of direction (to one skilled in the art) of how to select the correct phenolic compound as an initial reactant. Appellants have admitted that some experimentation would be involved. Thus, although the enablement requirement of 35 U.S.C. 112 might be satisfied, the description of the invention requirement is not. In re DiLeone, 436 F.2d 1404, 58 C.C.P.A. 925, 168 U.S.P.Q. (BNA) 592 (1971). **[**20]**

n3 The majority improperly assumes that one skilled in the art would find appellants' parent application directed to individual polyol compounds and that, therefore, a disclosure of a range of from 1 to 5 moles of alkylene oxide reactant would result in the formation of only five compounds. This ignores the fact that the preferred embodiment of the parent application calls for the entire crude Mannich reaction product which, upon further reaction with alkylene oxide, would yield an almost infinite number of different mixtures of polyol compounds.

n4 Although the Solicitor appears to admit that reaction of 3 moles of propylene oxide with the appropriate Mannich reaction product will yield the claimed compound, neither the examiner nor the board did so, and no disclosure in appellants' parent application supports such a conclusion. The board, in discussing the issue of appellants' claim to the benefit of section 120 (and appellants' satisfaction of the requirements of section 112), referred to combining propylene oxide "in an amount sufficient to obtain the pentol of claim 3," and the examiner referred to a product containing 3 moles of propylene oxide.

- - - - - - - - - - - - End Footnotes- - - - - - - - - - - - - - **[**21]**

The majority opinion fails to explain why or how the mere disclosure of a mole range of a reactant that would result in the formation of an almost infinite number of different mixtures of polyol compounds, depending upon the number of moles of reactant chosen, provides an adequate description in this case, while the disclosure of at least 19 possible amine reactants in In re Ruschig, 379 F.2d 990, 54 C.C.P.A. 1551, 154 U.S.P.Q. (BNA) 118 (1967), and the naming of a number of possible substituents in Flynn v. Eardley, 479 F.2d 1393, 178 U.S.P.Q. (BNA) 288 (C.C.P.A. 1973), and Fields v. Conover, 433 F.2d 1386, 58 C.C.P.A. 1366, 170 U.S.P.Q. (BNA) 276 (1971), did not. Absent an explanation, the decision of the board should be affirmed.

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Service: **Get by LEXSEE®**
Citation: **379 F2d 990**

*54 C.C.P.A. 1551, *; 379 F.2d 990, **;*
*1967 CCPA LEXIS 284, ***; 154 U.S.P.Q. (BNA) 118*

IN RE HEINRICH RUSCHIG, WALTER AUMULLER, GERHARD KORGER, HANS WAGNER, JOSEF SCHOLZ AND ALFRED BANDER

No. 8071

United States Court of Customs and Patent Appeals

54 C.C.P.A. 1551; 379 F.2d 990; 1967 CCPA LEXIS 284; 154 U.S.P.Q. (BNA) 118

Oral argument May 3, 1967 June 22, 1967

PRIOR HISTORY: [*1]**

APPEAL from Patent Office, Serial No. 601,107

DISPOSITION: Affirmed.

CASE SUMMARY

PROCEDURAL POSTURE: Appellants, inventors of an oral medication for the control of diabetes, appealed the decision of the United States Patent Office Board of Appeals affirming the rejection of one claim of their patent application on the grounds that the claim was not supported by the disclosure of appellants' application.

OVERVIEW: Appellants, inventors of an oral medication for the control of diabetes, appealed the decision of the Patent Office Board of Appeals (Board) affirming the rejection of one claim of their patent application on the ground that the claim was not supported by the disclosure of the application. The court affirmed. The Board had jurisdiction and authority to reopen appellants' patent prosecution and to reject the claim on a new ground. The chemical compound of the claim at issue was not named or identified by formula and the compound could find support only as choices made between the several variables involved. There were no "guides" in the specification that would lead one skilled in the art to the claimed compound. Specific claims to single compounds required reasonably specific supporting disclosure, and, while naming was not essential, something more than the disclosure of a class of 1000, or 100, or even 48, compounds was required.

OUTCOME: The court affirmed, holding that the chemical compound of the claim at issue was not named or identified by formula and that supporting disclosure that involved choices among numerous variables was not adequate support.

CORE TERMS: compound, disclosure, specification, examiner, formula, skilled, variable, chlorpropamide, alkylamine, invention, chemist, serial, n-propylamine, chlorine, amine, trees, excluding, enabled, patent, n-butylamine, listing, bromine, reopen, carbon, alkyl, trail, atoms, present situation, pro and con, encompasses

LexisNexis(R) Headnotes ◆ Hide Headnotes

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals

Patent Law > U.S. Patent & Trademark Office Proceedings > Examinations > General Overview

HN1± There is nothing unusual, certainly, about a patent examiner changing his viewpoint as to the patentability of claims as the prosecution of a case progresses, and, so long as the rules of Patent Office practice are duly complied with, an applicant has no legal ground for complaint because of such change in view. More Like This Headnote

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals
Patent Law > U.S. Patent & Trademark Office Proceedings > Reissues > General Overview
Patent Law > Claims & Specifications > Description Requirement > General Overview

HN2± Specific claims to single compounds require reasonably specific supporting disclosure, and while naming is not essential, something more than the disclosure of a class of 1000, or 100, or even 48, compounds is required. Surely, given time, a chemist could name, especially with the aid of a computer, all of the half million compounds within the scope of the broadest claim, which claim is supported by the broad disclosure. This does not constitute support for each compound individually when separately claimed. More Like This Headnote

COUNSEL: *Eugene O. Retter, John Kekich (Sidney W. Russell,* of counsel) for appellants.

Joseph Schimmel for the Commissioner of Patents.

OPINIONBY: RICH

OPINION: [991]**

[*1552] Before WORLEY, Chief Judge, RICH SMITH, ALMOND, Associate Judges, and WILLIAM H. KIRKPATRICK *

* Senior District Judge, Eastern District of Pennsylvania, sitting by designation.

RICH, Judge, delivered the opinion of the court.

This appeal is from the decision of the Patent Office Board of Appeals affirming the rejection of claim 13 of application serial No. 601,107, filed July 31, 1956, for "New Benzene Sulfonyl Ureas and Process for Their Preparation." Apparently The Upjohn Company has been prosecuting the application.

This case is a sequel to our decision in In re Ruschig, 52 CCPA 1238, 343 F.2d 965, 145 USPQ 274, decided April 22, 1965. There we reversed a rejection of twelve claims of this same application based on prior art. The claim on appeal is one of those claims. It reads:

13. N-(p-chlorobenzenesulfonyl)-N'-propylurea

That compound is structurally identified as

[Graphic omitted. See illustration in **[***2]** original.]

It is known by the generic name chlorpropamide and is sold under the trademark Diabinese by Chas. Pfizer & Co., Inc., as an oral medication for the control of diabetes mellitus, as more fully explained in our previous opinion, wherein we also had occasion to discuss the claim 13 compound which is again before us. We refer to that opinion for a more complete exposition of the chemical nomenclature and further background.

The sole issue on this appeal is whether claim 13 is supported by the disclosure of appellants' application, a question which had not been raised in this case at the time of the prior appeal. The following events gave rise to the issue.

About a year after the present application was filed, the examiner suggested claim 13 to applicants for purposes of interference with a Pfizer application filed by McLamore, serial No. 660,064 of May 20, 1957, and September 25, 1957, the claim was added. Interference 89,091 was declared and in it McLamore moved to dissolve on the **[*1553]** ground, inter alia, that the claim was not supported in the application at bar. The examiner held the claim was supported and denied the motion. On reconsideration, he adhered **[***3]** to his decision. (The suggestion of the claim and these two decisions on motions are referred to by appellants as three rulings in their favor by the Patent Office, nearly ten years ago, on the present issue.) Later the examiner dissolved the interference on his own motion on the ground claim 13 was unpatentable to the interference parties over prior art. Meanwhile both appellants and McLamore had filed divisional applications claiming methods of treating diabetes and compositions therefor, appellants' application being serial No. 185,865, filed April 9, 1962. It had two sets of claims, 1-4 for tablets and 5-8 for method of treatment. Claims 3 and 7 specified the same compound as that of claim 13. These claims were under rejection by reason of one-year statutory bars which could be overcome only by reliance on the filing date of the present parent application which gave rise to the question whether the application contained support for the claims. In an appeal to the board in application 185,865, by an opinion of March 4, 1965, the board, having gone into the application and interference history, held that claims 3 and 7 in that application did not have support in the present **[***4]** application because the claim 13 compound is not disclosed therein and issued a new rejection under Rule 196(b) on that ground. n1

n1 The board opinion is reported at 147 USPQ 46. After receiving it, appellants cancelled claims 3 and 7 from application 185,865 and patent No. 3,198,706 was issued thereon, Aug. 3, 1965, to the assignee Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. **[**992]**

After our decision on the prior appeal, in which we reversed the rejection on prior art, the application was returned to the examiner. Since he knew of the board's action in the other application holding that the disclosure does not support the compound of claim 13, he requested and obtained from the First Assistant Commissioner authorization to reopen the case to reject claim 13 on the new ground of lack of support, which he did on June 15, 1965, as follows:

In view of the decision of the Board of Appeals of March 4, 1965 in Serial No. 185,865, holding that claims 3 and 7 therein were not supported by the disclosure of the instant case and hence not entitled to the benefit of the date thereof, claim 13 herein which is specific to a compound, the use of which **[***5]** is recited in claims 3 and 7, supra, is rejected as having no specific support in this disclosure for reasons fully detailed in said decision (Appeal No. 283-74), Paper No. 25, at pages 4-7. The compound of claim 13 is not named or identified by formula and it can find support only as choices made between the several variables involved. This is not regarded as adequate support for a specific compound never named or otherwise exemplified in the specification as filed. See In re Fried 1963 C.D. 248 (page 257, first paragraph [50 CCPA 954, 312 F.2d 930, 136 USPQ 729]).

[*1554] Appellants then argued this rejection before the examiner who adhered to it and made it final. Reconsideration was requested and given, the examiner adhering to his view. Appellants then took the question to the board where the examiner filed an extensive Answer to their lengthy brief. The board affirmed for very much the same reasons as those stated in its opinion in deciding the same issues in application serial No. 185,865. Thus the question before us has been twice decided adversely to appellants by the Board of Appeals, the same panel hearing both appeals. n2

n2 Federico and Rosa, Examiners-in-Chief, and Stone, Acting Examiner-in-Chief; opinions by Federico. **[***6]**

In coming here, appellants raise a question in addition to the issue of support which requires preliminary consideration. They say that in this second appeal "involving the Same and already adjudicated Claim, the United States Patent Office was without authority, or lacked jurisdiction, to reopen these proceedings (after the Court's decision) to resurrect a ground of rejection which had already been considered by the Patent Office, this lack of authority being based upon principles of, or akin to, res judicata, estoppel or laches."

In answer, the solicitor says there is no such issue before us since it was not raised before the board, is raised for the first time in this court, and was not properly raised by any reason of appeal. Appellants counter with the argument that Reason of Appeal 9, reading, "The Board of Appeals erred in matters of law," will suffice. They also say that, being a matter of "jurisdiction over subject matter," it can be raised at any time.

[1] We pass these ingenious and technical legal arguments since we prefer to say that we have considered the numerous cases relied on by appellants to support their proposition that the Patent Office cannot make **[***7]** this rejection because many years ago an examiner ruled to the contrary and find the point lacking in merit and unsupported by authority. We appreciate the extensive memorandum of law supplied in the appendix to appellants' brief, containing cases pro and con, and note the heavy reliance on what was said in two concurring opinions. We surmise appellants would have to agree that what precedents they have found are not, as a whole, very strong support for their theory. The words of Judge Garrett in In re Ellis, 24 CCPA 759, 86 F.2d 412, 31 USPQ 380, which appellants found quoted in In re Becker, 26 CCPA 922, 101 F.2d 557, 40 USPQ 624, fairly depict the present **[**993]** situation, which is not much different from that prevailing in 1936,

HN1↑There is nothing unusual, certainly, about an examiner changing his viewpoint as to the patentability of claims as the prosecution of a case progresses, and, so long as the rules of Patent Office practice are duly complied with, an applicant has no legal ground for complaint because of such change in view.

[*1555] The life of a patent solicitor has always been a hard one.

[a] Appellants insinuate that in our former decision in this **[***8]** case we found all the claims, including claim 13, patentable. Their words are, "Presently appealed Claim 13 was also indicated as allowable by this Court." They also say that this application "was returned by this Court to the Patent Office for issuance * * *." We did neither of these things. We passed on a rejection on prior art, affirmed by the board, found it in error, and reversed the board decision. Nothing more. Under 35 USC 144 the only effect of our decision was to govern further proceedings in the case.

[3] Appellants concede that the Patent Office can reopen a case returned by this court after appeal and reject claims on newly found prior art and attempt to distinguish the present situation on the ground that the rejection now applied is not based on newly found art but on the specification which has been available since the application was filed. Further, they say the very question was adjudged in their favor long ago. We are unable to see that these differences have legal significance. See In re Citron, 51 CCPA 869, 326 F.2d 418, 140 USPQ 220. For related views on res judicata as applied to patent prosecution see our recent

opinions in In re Herr, 54 CCPA 1315, **[***9]** 377 F.2d 610, 153 USPQ 548. We hold the Patent Office had the jurisdiction and the authority to reopen prosecution and to reject claim 13 on a new ground, to the merits of which rejection we now pass.

We have quoted the examiner's rejection above. His first point was that the compound of claim 13 "was not named or identified by formula" in the specification. Appellants admit this. His next point was that it "can find support only as choices made between the several variable involved." These words are the words of Judge Smith in In re Fried, supra, a case in which we found lack of support in general disclosures. Their purport in the factual context of this case is that the reagents for the preparation of chlorpropamide are listed, with many others, in the disclosure and, as the board said, "If the proper choices of the three variables in the above formula are made, the compound in question is produced," the formula referred to being that of the family of benzene sulphonyl-ureas in which the variables are R, R(1) and R(2), to be seen in claim 1 reproduced in our former opinion. The board continued its statement, saying, "but nowhere in the specification is the particular selection **[***10]** indicated."

It does not seem to be contested that the general disclosure of the application encompasses something like half a million possible compounds. n3 It also discloses a number of specific compounds. Appellants' **[*1556]** argument is that one skilled in the art would find certain "guides" in the specification which would lead him to the compound of claim 13 and that the compound is therefore disclosed. Further reliance is placed on our opinion in In re Petering, 49 CCPA 993, 301 F.2d 676, 133 USPQ 275, taken in connection with original claim 2, legally deemed a part of the disclosure, which appellants say encompasses only 48 compounds, "excluding isomers," **[**994]** this being in effect one of the "guides," Original claim 2 reads:

n3 In the companion case of In re McLamore (Patent Appeal 7829), concurrently decided, a Ph.D. chemist who heads the Pfizer Patent Department has made an affidavit of record in which he shows how he has calculated, on a conservative basis, including sodium and potassium salts, the number of compounds within the broad disclosure of this application to be 1,237,464. We express no view on this mathematical question. The number is very large in any event. **[***11]**

2. Benzenesulphonylureas of the general formula

[Graphic omitted. See illustration in original.]

wherein R is a member selected from the group consisting of chlorine and bromine and R(2) is a member selected from the group of alkyl-, alkenyl-, cycloalkyl- and cycloalkylalkyl radicals containing 2 to 7 carbon atoms.

Appellants refer to this formula as narrowing the field of selection, so to speak, and say that "excluding isomers," there are "approximately" 48 compounds within the scope of that claim all of which are "readily determinable by skilled chemists." What this amounts to is saying that skilled chemists can see that R is either Cl or Br and that R(2) is any one of the radicals above recited. The examiner computes that the number of possible compounds is not approximately 48 but a minimum of 1,010, "excluding stereoisomerides." He shows his calculations and we do not find a refutation of them by appellants to justify their contention the number is 48, nor any explanation of how the number 48 is arrived at. The Petering case is used for its finding that a particular reference disclosure of a subgeneric class of compounds to the number of only 20, some of which were **[***12]** disclosed by name, was as good as Prior art disclosure of all 20 as though they had all been named, for the purpose of anticipating an invention, not for the purpose of disclosing it to support a claim. As we said in our prior opinion in this case, "Petering involved a very special situation * * *." We do not consider the facts here to be sufficently similar to make it pertinent. [4] It is not our view that a disclosure such as that to be found in the formula and words of claim 2, above, amounts to a disclosure, sufficient to support a specific claim, of every compound a skilled chemist can see is within the scope of that claim. HN2Specific claims to single compounds require reasonably specific supporting disclosure and while we agree with the appellants, as the board did, that Naming is not essential, something more than the disclosure of a class of 1000, or 100, or even 48, compounds is required. Surely, given time, a chemist could name (especially with the aid of a computer) **[*1557]** all of the half million compounds within the scope of the broadest claim, which claim is supported by the broad disclosure. This does not constitute support for each compound individually when **[***13]** separately claimed.

Other "guides" allegedly Leading to chlorpropamide argued by appellants will now be discussed. It is said eleven processes for making the many compounds of the invention are disclosed, five of which employ an "alkylamine." This is R(2) in the general formula. But in that formula there is also the variable R which may be hydrogen, chlorine, bromine, methyl, or methoxy and R(1) which may be either chlorine or bromine and, furthermore, R and R(1) may be located anywhere on the benzene ring, that is, ortho, meta, or para to the SO(2) group and adjacent or non-adjacent one another. This makes for more than a few unidentified possibilities not determined by the use of alkylamine alone. To lead to claim 13, R must be hydrogen and R(1) must be chlorine and the alkylamine, R(2), must be propylamine.

Next, it is argued in connection with these processes that in the discussion of Process (1) it is taught that the primary amine could be "a primary butylamine or another primary alkylamine or an alkenylamine, cyclo-alkylamine or cycloalkylalkyl-amine containing 2 to 7 or 8 carbon atoms" and that one skilled in the art could see that "if n-butylamine is a reactant, then **[***14]** ethylamine, n-propylamine, etc., are also possible reactants." We do not see that this guides one to the use of n-propylamine. The important words in the quotation from our point of view are "etc." and "possible". It is an old custom **[**995]** in the woods to mark trails by making blaze marks on the trees. It is no help in finding a trail or in finding one's way through the woods where the trails have disappeared - or have not yet been made, which is more like the case here - to be confronted simply by a large number of unmarked trees. Appellants are pointing to trees. We are looking for blaze marks which single out particular trees. We see none.

Appellants say next that the "guide" becomes more crystallized by the recitation of the alkylamines which can be employed in the four or five reactions described as using them. This list contains at least 19 primary amines which the specification says may be used. Appellants emphasize two, n-butylamine, which is elsewhere specifically disclosed as having been used, and n-propylamine. We do not see that listing the latter with the 18 others adds anything to the initial statement that one may use an alkyl amine containing from 2 **[***15]** to 6 carbon atoms. Propylamine is such an amine but one is not led to it in preference to the others merely by listing them all and identifying it, with the others, by name.

Finally appellants refer to two tables listing, respectively, ten and twelve specific compounds, the first being the list of specific compounds whose blood sugar lowering activity is shown in the specification, **[*1558]** the other, which duplicates the first and adds two compounds, being the specific examples of the specification. There is no N'-n-propyl compound among them. Perhaps one of appellants' best points is that the activity table "stresses" compounds in which R(2) is a primary alkyl radical, i.e., ethyl, butyl, isobutyl and hexyl. The stress resides in the fact that eight of the ten are such compounds. And one of them, N-(4-chlorobenzenesulphonyl)-N'-n-butyl urea, is a homolog of the compound of claim 13. It must be admitted that this is getting close. If n-propylamine had been used in making the compound instead of n-butylamine, the compound of claim 13 would have resulted.

Appellants submit to us, as they did to the board, an imaginary specific example patterned on specific example 6 by **[***16]** which the above butyl compound is made so that we can see what a simple change would have resulted in a apecific supporting disclosure being present in the specification. The trouble is that there is no such disclosure, easy though it is to imagine it. It is equally easy to imagine that the compound of claim 13 might have been named in the specification. Working backward from a knowledge of chlorpropamide, that is by hindsight, it is all very clear what route one would travel through the forest of the specification to arrive at it. [5] But looking at the problem, as we must, from the standpoint of one with no fore-knowledge of the specific compound, it is our considered opinion that the board was correct in saying:

> Not having been specifically named or mentioned in any manner, one is left to selection from the myriads of possibilities encompassed by the broad disclosure, with no guide indicating or directing that this particular selection should be made rather than any of the many others which could also be made.

Appellants refer to 35 USC 112 as the presumed basis for this rejection and emphasize language therein about enabling one skilled in the art to make the invention, **[***17]** arguing therefrom that one skilled in the art would be enabled by the specification to make chlorpropamide. We find the argument unpersuasive for two reasons. First, it presumes some motivation for wanting to make the compound in preference to others. While we have no doubt a person so motivated would be enabled by the specification to make it; this is beside the point for the question is not whether he would be so enabled but whether the specification discloses the compound to him, specifically, as something appellants actually invented. We think it does not. Second, we doubt that the rejection is truly based on section 112, at least on the parts relied on by appellants. If based on section 112, it is on the requirement thereof that "The specification shall contain a written description of the invention **[**996]** * * *." [Emphasis ours.] We have a specification which describes appellants' invention. The issue here is in no wise a question of its compliance with section 112, it is a question of fact: Is the compound of claim 13 described therein? **[*1559]** Does the specification convey clearly to those skilled in the art, to whom it is addressed, in any way, the information **[***18]** that appellants invented that specific compound? Having considered the specification in the light that has been shed on it by all the arguments pro and con, we conclude that it does not.

The decision of the board is affirmed.

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Citation: **93 F3d 1559**

*93 F.3d 1559, *; 1996 U.S. App. LEXIS 22414, **;*
39 U.S.P.Q.2D (BNA) 1895

YOSHIHIRO FUJIKAWA, MIKIO SUZUKI, HIROSHI IWASAKI, MITSUAKI SAKASHITA and MASAKI KITAHARA, Appellants, v. SOMPONG WATTANASIN, Appellee. YOSHIHIRO FUJIKAWA, MIKIO SUZUKI, HIROSHI IWASAKI, MITSUAKI SAKASHITA and MASAKI KITAHARA, Appellants, v. SOMPONG WATTANASIN, Appellee.

95-1418, 95-1425

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

93 F.3d 1559; 1996 U.S. App. LEXIS 22414; 39 U.S.P.Q.2D (BNA) 1895

August 28, 1996, Decided

PRIOR HISTORY: [1]** Appealed from: U.S. Patent and Trademark Office Board of Patent Appeals and Interferences.

DISPOSITION: AFFIRMED.

CASE SUMMARY

PROCEDURAL POSTURE: Appellants challenged the determination of the United States Patent and Trademark Office Board of Appeals and Interferences, which granted priority in invention rights of a drug to appellees.

OVERVIEW: Appellants and appellees both invented a drug that inhibited cholesterol synthesis. However, appellees were granted priority over appellants as to the invention of the drug. Appellants challenged the finding, contending the date that appellees' invention was reduced to practice was erroneously determined. Appellants also argued that appellees had illegally suppressed or concealed their invention, and thus appellants should be given priority rights in the invention. The court held that the practical utility requisite to reducing an invention to practice could be shown in a chemical by proffering evidence of any pharmacological activity. As appellees had arguably met this burden based on the evidence, the court upheld the board's determination as to appellees' reduction to practice of the drug. The court then held that while evidence showed appellees were slow in prosecuting their claim for a patent, their delay did not rise to the level of patent suppression or concealment.

OUTCOME: Judgment affirmed, as the grant of priority invention rights in drug to appellees was not erroneous.

CORE TERMS: compound, vitro, vivo, invention, reduction, patent, practical utility, suppression, inventor, disclosure, testing, concealment, pharmacological, cholesterol, sub-genus, genus, tree, spurring, recite, correlation, renewed, skilled, third party, biosynthesis, patient, diligence, cyclopropyl, spurred, tested, novel

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Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals
Patent Law > Jurisdiction & Review > Personal Jurisdiction & Venue > General Overview

HN1↓The United States Court of Appeals for the Federal Circuit has jurisdiction to hear appeals of decisions of the United States Patent and Trademark Office Board of Patent Appeals and Interferences under 28 U.S.C.S. § 1295(a)(4) (A). More Like This Headnote

Patent Law > Utility Requirement > Proof of Utility

HN2↓A patent may not be granted to an invention unless substantial or practical utility for the invention has been discovered and disclosed. Similarly, actual reduction to practice, which constitutes in law the final phase of invention, cannot be established absent a showing of practical utility. More Like This Headnote

Patent Law > Utility Requirement > Chemical Compounds

HN3↓In the pharmaceutical arts, practical utility for patent law purposes may be shown by adequate evidence of any pharmacological activity when no utility is claimed. More Like This Headnote

Patent Law > Utility Requirement > Proof of Utility

Patent Law > Utility Requirement > Chemical Compounds

Patent Law > Inequitable Conduct > General Overview

HN4↓In examining test results to prove pharmacological activity requisite to showing practical utility for patent law purposes, the test results need not absolutely prove that the compound at issue is pharmacologically active. All that is required is that the tests be reasonably indicative of the desired pharmacological response. In other words, there must be a sufficient correlation between the tests and an asserted pharmacological activity so as to convince those skilled in the art, to a reasonable probability, that the novel compound will exhibit the asserted pharmacological behavior. More Like This Headnote

Patent Law > Utility Requirement > Fact & Law Issues

Patent Law > U.S. Patent & Trademark Office Proceedings > General Overview

Patent Law > Anticipation & Novelty > Fact & Law Issues

HN5↓The ultimate determination of reduction to practice of a patent count is a question of law that the court reviews de novo. In contrast, it reviews the United States Patent and Trademark Board Office Board of Patent Appeals and Interferences' (Board) factual findings supporting its legal conclusions about reduction to practice for clear error. Whether a practical utility is established for a novel compound is a question of fact. The court therefore reviews the Board's findings with respect to practical utility for clear error. More Like This Headnote

Patent Law > U.S. Patent & Trademark Office Proceedings > Examinations > General Overview

HN6↓To the extent the record of a case presents a conflict in testimony, the United States Patent and Trademark Office Board of Patent Appeals and Interferences is well within its discretion as fact finder to credit the testimony of one party's witnesses over another's witnesses. More Like This Headnote

Patent Law > Utility Requirement > Chemical Compounds

HN7↓A "rigorous correlation" between in vitro and in vivo results need not be shown in order to establish practical utility of a chemical for patent law purposes; "reasonable correlation" suffices. More Like This Headnote

Patent Law > Jurisdiction & Review > Standards of Review > General Overview

Patent Law > Date of Invention & Priority > General Overview

HN8↓In patent law, suppression or concealment is a question of law the court reviews de novo. More Like This Headnote

Patent Law > Statutory Bars > Abandonment & Forfeiture Bar > Filing Delay
Patent Law > Date of Invention & Priority > General Overview

HN9↓In patent law, there are two types of suppression and concealment: cases in which the inventor deliberately suppresses or conceals his invention, and cases in which a legal inference of suppression or concealment is drawn based on "too long" a delay in filing a patent application. More Like This Headnote

Patent Law > Date of Invention & Priority > Reduction to Practice
Patent Law > Date of Invention & Priority > Abandonment, Concealment & Resumption of Activity

HN10↓In patent law, intentional suppression refers to situations in which an inventor designedly, and with the view of applying it indefinitely and exclusively for his own profit, withholds his invention from the public. Intentional suppression, however, requires more than the passage of time. It requires evidence that the inventor intentionally delayed filing in order to prolong the period during which the invention is maintained in secret. More Like This Headnote

Patent Law > Date of Invention & Priority > General Overview

HN11↓Evidence that a first inventor was spurred to disclose by the activities of a second inventor is an important factor in priority determinations because it creates an inference that, but for the efforts of the second inventor, the public would never have gained knowledge of the invention. More Like This Headnote

Patent Law > Date of Invention & Priority > Abandonment, Concealment & Resumption of Activity
Patent Law > Inequitable Conduct > General Overview

HN12↓In patent law, there are no set strict time limits regarding the minimum and maximum periods necessary to establish an inference of suppression or concealment. Rather, it is not the time elapsed that is the controlling factor but the total conduct of the first inventor. Thus, the circumstances surrounding the first inventor's delay and the reasonableness of that delay are important factors that must be considered in deciding questions of suppression or concealment. More Like This Headnote

Patent Law > Claims & Specifications > Description Requirement > General Overview
Patent Law > Jurisdiction & Review > Standards of Review > General Overview

HN13↓Whether a disclosure contains a sufficient written description to support a proposed count, is a question of fact that the court reviews for clear error. More Like This Headnote

Patent Law > Claims & Specifications > Description Requirement > General Overview

HN14↓Ipsis verbis disclosure is not necessary to satisfy the written description requirement of proposing a sub genus count in patent law. Instead, the disclosure need only reasonably convey to persons "skilled in the art" that the inventor had possession of the subject matter in question. In other words, the question is whether a party's application provides adequate direction that reasonably would lead persons "skilled in the art" to the sub-genus of the proposed count. More Like This Headnote

COUNSEL: Steven B. Kelber, Oblon, Spivak, McClelland, Maier & Neustadt, P.C., of Arlington, Virginia, argued for appellants.

Diane E. Furman, Sandoz Corporation, of East Hanover, New Jersey, argued for appellee.

JUDGES: Before MAYER, CLEVENGER, and RADER, Circuit Judges.

OPINIONBY: CLEVENGER

OPINION:

[*1561] CLEVENGER, Circuit Judge.

Yoshihiro Fujikawa et al (Fujikawa) appeal from two decisions of the Board of Patent Appeals and Interferences of the United States Patent & Trademark Office (Board) granting priority of invention in two related interferences to Sompong Wattanasin, and denying Fujikawa's motion to add an additional sub-genus count to the interferences. We affirm.

I

These interferences pertain to a compound and method for inhibiting cholesterol biosynthesis in humans and other animals. The compound count recites a genus of novel mevalonolactones. The method count recites a method of inhibiting the biosynthesis of cholesterol by administering to a "patient in need of said treatment" an appropriate dosage of a compound falling **[**2]** within the scope of the compound count.

The real parties in interest are Sandoz Pharmaceuticals Corporation (Sandoz), assignee of Wattanasin, and Nissan Chemical Industries, Ltd. (Nissan), assignee of Fujikawa.

The inventive activity of Fujikawa, the senior party, occurred overseas. Fujikawa can thus rely only on his effective filing date, August 20, 1987, to establish priority. 35 U.S.C. § 102 (g) (1994). Whether Wattanasin is entitled to priority as against Fujikawa therefore turns on two discrete questions. First, whether Wattanasin has shown conception coupled with diligence from just prior to Fujikawa's effective filing date until reduction to practice. Id. Second, whether Wattanasin suppressed or concealed the invention between reduction to practice and filing. Id. With respect to the first question, Fujikawa does not directly challenge the Board's holdings on Wattanasin's conception or diligence, but rather contends that the Board incorrectly fixed the date of Wattanasin's reduction to practice. As for the second question, Fujikawa contends that the Board erred in concluding that Wattanasin had not suppressed or concealed the invention. Fujikawa seeks reversal, and **[**3]** thus to establish priority in its favor, on either ground.

II

The Board divided Wattanasin's inventive activity into two phases. The first phase commenced in 1979 when Sandoz began searching for drugs which would inhibit the biosynthesis of cholesterol. Inventor Wattanasin was assigned to this project in 1982, and during 1984-1985 he synthesized three compounds falling within the scope of the compound count. When tested in vitro, each of these compounds exhibited some cholesterol-inhibiting activity, although not all the chemicals were equally effective. Still, according to one Sandoz researcher, Dr. Damon, these test results indicated that, to a high probability, the three compounds "would be active when administered in vivo to a patient to inhibit cholesterol biosynthesis, i.e. for the treatment of hypercholesteremia or atherosclerosis." Notwithstanding these seemingly positive results, Sandoz shelved Wattanasin's project for almost two years, apparently because the level of in vitro activity in two of the three compounds was disappointingly low.

By January 1987, however, interest in Wattanasin's invention had revived, and the second phase of activity began. Over **[**4]** the next several months, four more compounds falling within the scope of the compound count were synthesized. In October, these compounds were tested for in vitro activity, and each of the four compounds yielded positive results. Again, however, there were significant differences in the level of in vitro activity of the four compounds. Two of the compounds in particular, numbered 64-935 and 64-936, exhibited in vitro activity significantly higher than that of the other two compounds, numbered 64-933 and 64-934.

Soon after, in December 1987, the three most active compounds in vitro were subjected to additional in vivo testing. For Sandoz, one primary purpose of these tests was to **[*1562]** determine the in vivo potency of the three compounds relative to that of Compactin, a prior art compound of known cholesterol-inhibiting potency. From the results of the in vivo tests, reproduced in the margin, n1 Sandoz calculated an ED50 n2 for each of the compounds and compared it to the ED50 of Compactin. Only one of the compounds, compound 64-935, manifested a better ED50 than Compactin: an ED50 of 0.49 as compared to Compactin's ED50 of 3.5. All of the tests performed by Sandoz **[**5]** were conducted in accordance with established protocols.

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n1

Compound	**dosage**	**% change**
64-933	1.0	-36.3%
	0.3	-17.0%
	0.1	-18.6%
64-935	1.0	-65.8%
	0.3	-29.7%
	0.1	-36.3%
64-936	1.0	-9.0%
	0.3	-39.2%
	0.1	-22.5%

n2 The ED50 of a compound represents the effective concentration, measured in milligrams of compound per kilogram of laboratory specimen, which inhibits cholesterol biosynthesis by 50%.

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During this period, Sandoz also began to consider whether, and when, a patent application should be filed for Wattanasin's invention. Several times during the second phase of activity, the Sandoz patent committee considered the question of Wattanasin's invention but decided that it was too early in the invention's development to file a patent application. Each time, however, the patent committee merely deferred decision on the matter and specified that it would be taken up again at subsequent meetings. Finally, in January 1988, with the in vivo testing completed, the Committee assigned Wattanasin's invention an "A" rating which meant that the invention was ripe for filing and that a patent application should be prepared. The case was assigned **[**6]** to a Ms. Geisser, a young patent attorney in the Sandoz patent department with little experience in the pharmaceutical field.

Over the next several months the Sandoz patent department collected additional data from the inventor which was needed to prepare the patent application. This data gathering took until approximately the end of May 1988. At that point, work on the case seems to have ceased for several months until Ms. Geisser began preparing a draft sometime in the latter half of 1988. The parties dispute when this preparation began. Fujikawa contends that it occurred as late as October, and that Ms. Geisser was spurred to begin preparing the draft application by the discovery that a patent to the same subject matter had been issued to a third party, Picard. Fujikawa, however, has no evidence to support that contention. In contrast, Sandoz contends that Ms. Geisser began the draft as early as August, and that she was already working on the draft when she first heard of Picard's patent. The evidence of record, and in particular the testimony of Ms. Geisser, supports that version of events. In any event, the draft was completed in November and, after several turn-arounds with **[**7]** the inventor, ultimately filed in March of 1989.

Both Wattanasin and Fujikawa requested an interference with Picard. The requests were granted and a three-party interference between Picard, Fujikawa, and Wattanasin was set up. Early in the proceedings, however, Picard filed a request for an adverse judgment presumably because he could not antedate Fujikawa's priority date. What remained was a two-party interference between Fujikawa and Wattanasin. Ultimately, for reasons not significant to this appeal, the interference was divided into two interferences: one relating to the method count and one relating to the compound count. The Board decided each of these interferences adverse to Fujikawa.

With respect to the compound count, the Board made two alternative findings regarding reduction to practice. First, it found that the in vitro results in October 1987 showed sufficient practical utility for the compound so as to constitute a reduction to practice as of the date of those tests. n3 In the alternative, **[*1563]** the Board held, the in vivo tests which showed significant activity in the 64-935 compound at doses of 1.0 and 0.1 mg were sufficient to show practical utility. Consequently, **[**8]** Wattanasin had reduced the compound to practice, at the latest, as of December 1987. Since Fujikawa did not challenge Wattanasin's diligence for the period between Fujikawa's effective filing date of August 20, 1987 and Wattanasin's reduction to practice in either October or December 1987, the Board held that Wattanasin was de facto the first inventor of the compound count. Finally, the Board found that the seventeen month period (counting from the in vitro testing) or fifteen month period (counting from the in vivo testing) between Wattanasin's reduction to practice and filing was not sufficient to raise an inference of suppression or concealment given the complexity of the invention, and therefore awarded priority of the compound count to Wattanasin. In reaching this conclusion, the Board rejected Fujikawa's argument that Wattanasin was spurred to file by Picard because it held that spurring by Picard, a third party, had no legal effect in a priority dispute between Fujikawa and Wattanasin.

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n3 As explained more fully below, reduction to practice requires a showing of practical utility, which may be satisfied by an "adequate showing of any pharmacological activity." Nelson v. Bowler, 626 F.2d 853, 856, 206 U.S.P.Q. (BNA) 881, 883 (CCPA 1980).

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With respect to the method count, the Board determined that Wattanasin reduced to practice in December 1987 on the date that in vivo testing of the 64-935 compound was concluded. In reaching that conclusion, the Board first noted that a reduction to practice must include every limitation of the count. Consequently, Wattanasin's early in vitro testing could not constitute a reduction to practice of the method count, since that count recites administering the compound to a "patient." The in vivo testing, however, met the limitations of the count since the word "patient" was sufficiently broad to include the laboratory rats to whom the compounds were administered. The in vivo testing also proved that 64-935 had practical utility because the compound displayed significant cholesterol inhibiting activity at doses of 1.0 and 0.1 mg. Given this date of reduction to practice, the Board again held that Wattanasin was the de facto first inventor of the count and that the delay in filing of fifteen months was not sufficient to trigger an inference of suppression or concealment. The Board therefore awarded priority of the method count to Wattanasin.

Before this court, **[**10]** Fujikawa seeks review of these adverse priority determinations. In addition, during the motions period of the interference, Fujikawa moved to have an additional sub-genus count added to the interference. The Board denied that motion on the ground that the Wattanasin disclosure did not contain a sufficient written description to support the proposed count. Fujikawa appeals that decision, as well. *HN1*We have jurisdiction to hear this appeal under 28 U.S.C. § 1295(a)(4)(A) (1994).

III

We first address Fujikawa's argument that Wattanasin's in vitro and in vivo tests failed to establish a practical utility for either the compound or method count. The Board held that the in vitro tests established a practical utility for the compound and that the in vivo tests established a practical utility for both the compound and method counts. For the reasons set out below, we affirm these findings of the Board.

For over 200 years, the concept of utility has occupied a central role in our patent system. See Brenner v. Manson, 383 U.S. 519, 529, 148 U.S.P.Q. (BNA) 689, 693, 16 L. Ed. 2d 69, 86 S. Ct. 1033 (1966). Indeed, "the basic quid pro quo contemplated by the Constitution and the Congress for granting a patent **[**11]** monopoly is the benefit derived by the public from an invention with substantial utility." Id. at 534, 148 U.S.P.Q. (BNA) at 695. Consequently, it is well established that *HN2*a patent may not be granted to an invention unless substantial or practical utility for the invention has been discovered and disclosed. See Cross v. Iizuka, 753 F.2d 1040, 1044, 224 U.S.P.Q. (BNA) 739, 742 (Fed. Cir. 1985). Similarly, actual reduction to practice, which constitutes in law the final phase of invention, cannot be established absent a showing of practical utility. See Blicke v. Treves, 44 C.C.P.A. 753, 241 F.2d 718, 720-21, 112 U.S.P.Q. (BNA) 472, 474-75 (CCPA 1957).

[*1564] *HN3*In the pharmaceutical arts, our court has long held that practical utility may be shown by adequate evidence of any pharmacological activity. See, e.g., Nelson v. Bowler, 626 F.2d 853, 856, 206 U.S.P.Q. (BNA) 881, 883 (CCPA 1980); In re Krimmel, 48 C.C.P.A. 1116, 292 F.2d 948, 952-53, 130 U.S.P.Q. (BNA) 215, 219 (CCPA 1961). For example, in Campbell v. Wettstein, 476 F.2d 642, 646-47, 177 U.S.P.Q. (BNA) 376, 379 (C.C.P.A. 1973) we stated that "moreover, the interference counts contain no limitation relating to intended use or to discovered properties of the claimed compounds. Accordingly, under well-established **[**12]** precedent, evidence establishing substantial utility for any purpose is sufficient to show reduction to practice." The rule in Campbell was applied in Rey-Bellet v. Engelhardt, 493 F.2d 1380, 1383, 181 U.S.P.Q. (BNA) 453, 454 (C.C.P.A. 1974) ("Since the count contains no limitation related to any utility, evidence which would establish a substantial utility for any purpose is sufficient to show its reduction to practice."). n4 Such activity constitutes a practical utility because "it is inherently faster and easier to combat illnesses and alleviate symptoms when the medical profession is armed with an arsenal of chemicals having known pharmacological activities. Since it is crucial to provide researchers with an incentive to disclose pharmacological activities in as many compounds as possible, we conclude that adequate proof of any such activity constitutes a showing of practical utility." Nelson, 626 F.2d at 856, 206 U.S.P.Q. (BNA) at 883; see also Krimmel, 292 F.2d at 952-53, 130 U.S.P.Q. (BNA) at 219.

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n4 Strictly speaking, this articulation of the standard (i.e. evidence of any pharmacological activity) applies only when the count does not recite a particular utility. See Rey-Bellet v. Engelhardt, 493 F.2d 1380, 1383, 181 U.S.P.Q. (BNA) 453, 454 (CCPA 1974). In contrast, when the count recites a particular utility, practical utility requires an adequate showing of the recited utility. In this case, the compound count does not recite a particular utility, and practical utility is thus satisfied by evidence of any pharmacological activity. The method count, however, does recite a particular utility (i.e., cholesterol inhibition in patients in need of such treatment), and practical utility for that count therefore requires an adequate showing of that recited utility.

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It may be difficult to predict, however, whether a novel compound will exhibit pharmacological activity, even when the behavior of analogous compounds is known to those skilled in the art. Consequently, testing is often required to establish practical utility. See, e.g., Blicke, 241 F.2d at 720, 112 U.S.P.Q. (BNA) at 475. But HN4↑the test results need not absolutely prove that the compound is pharmacologically active. All that is required is that the tests be "reasonably indicative of the desired [pharmacological] response." Nelson, 626 F.2d at 856, 206 U.S.P.Q. (BNA) at 884. (emphasis added). In other words, there must be a sufficient correlation between the tests and an asserted pharmacological activity so as to convince those skilled in the art, to a reasonable probability, that the novel compound will exhibit the asserted pharmacological behavior. See Cross, 753 F.2d at 1050, 224 U.S.P.Q. (BNA) at 747.

HN5↑The ultimate determination of reduction to practice is a question of law which we review de novo. See Holmwood v. Sugavanam, 948 F.2d 1236, 1238, 20 U.S.P.Q.2D (BNA) 1712, 1714 (Fed. Cir. 1991). In contrast, we review the Board's factual findings supporting its legal conclusions about reduction **[**14]** to practice for clear error. Id. Whether a practical utility has been established for a novel compound is a question of fact. See Cross, 753 F.2d at 1044 n.7, 224 U.S.P.Q. (BNA) at 742 n.7. We therefore review the Board's findings with respect to practical utility for clear error.

A

This court has, on many occasions, considered the type and quantity of testing necessary to establish a practical utility for a novel compound. Although each case of practical utility must be considered on its own facts, see, e.g., Blicke, 241 F.2d at 720, 112 U.S.P.Q. (BNA) at 475, examination of our precedent illustrates the degree of proof which we have deemed sufficient to establish practical utility in the past.

The facts in this case are substantially similar to those in Cross v. Iizuka, 753 F.2d 1040, 224 U.S.P.Q. (BNA) 739 (Fed. Cir. 1985). There, we expressly held that, in appropriate circumstances, evidence of in vitro testing **[*1565]** could adequately establish a practical utility. n5 As we there explained:

> We perceive no insurmountable difficulty, under appropriate circumstances, in finding that the first link in the screening chain, in vitro testing, may establish a practical utility for the **[**15]** compound in question. . . . Under the

> circumstances of the instant case, where [an application] discloses an in vitro utility, . . . and where the disclosed in vitro utility is supplemented by the similar in vitro and in vivo pharmacological activity of structurally similar compounds, . . . we agree with the Board that this in vitro utility is sufficient to [establish utility].

Id. at 1051, 224 U.S.P.Q. (BNA) at 748. Thus, Cross holds that positive in vitro results, in combination with a known correlation between such in vitro results and in vivo activity, may be sufficient to establish practical utility.

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n5 While Cross involved a constructive reduction to practice, the same general principles are applicable to an actual reduction to practice. See id. at 1046 n.14, 224 U.S.P.Q. (BNA) at 744 n.14.

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Fujikawa does not argue that the law as stated in Cross is incorrect. Instead, Fujikawa contends that Wattanasin has failed to establish an adequate correlation between **[**16]** in vitro and in vivo results in the field of cholesterol-inhibiting compounds to permit Wattanasin to rely on affirmative in vitro results to establish a practical utility for the compound.

The Board determined that Wattanasin had reduced the compound count to practice in October 1987 when several compounds falling within the scope of the genus count exhibited activity in vitro. In reaching that conclusion, the Board relied on testimony from those skilled in the art that the in vitro results convinced them that the claimed compounds would exhibit the desired pharmacological activity when administered in vivo. This included testimony that "in vivo activity is typically highly correlatable to a compound's in vitro activity" in this field. The facts in this case are thus analogous to the ones in Cross where the court relied on positive in vitro test results in combination with a known correlation between such in vitro tests and in vivo activity to support a finding of practical utility.

To counter the Board's decision, Fujikawa points to the testimony of its own expert, Dr. Holmlund, who testified that:

> there is a reasonable element **[**17]** of doubt that some elements may be encountered which are active in the in vitro assay, but yet inactive in the in vivo assay.

According to Fujikawa, this testimony establishes that the in vitro tests were insufficient to prove practical utility.

We note first that HN6↑to the extent the record presents a conflict in the testimony, the Board was well within its discretion as fact finder to credit the testimony of Wattanasin's witnesses over that of Fujikawa's. More fundamentally, however, we do not consider Dr. Holmlund's testimony as a whole to contradict the Board's finding. Of course, it is possible that some compounds active in vitro may not be active in vivo. But, as our predecessor court in Nelson explained, HN7↑a "rigorous correlation" need not be shown in order to establish practical utility; "reasonable correlation" suffices. Here, even Dr. Holmlund implied in the question and answer immediately following the above quoted portion of his testimony, that such a "reasonable correlation" exists:

> Q.Would you accept, subject to exceptions that might occur, that the failure to find [in vivo] activity would be considered an exception, that there **[**18]** would be a reasonable expectancy [that in vitro activity implies that the compound will be active in vivo]?
>
> A. I think I would probably accept that.

Fujikawa also cites two articles n6 which it claims show that there is no reliable relationship between in vitro results and in vivo results in cholesterol inhibiting compounds similar to the ones at issue in this case. We disagree. Although the Sliskovic article, for **[*1566]** example, teaches that in vitro testing is sometimes not a good indicator of how potent a compound will be in vivo, it does imply that compounds which are active in vitro will normally exhibit some in vivo activity. See Sliskovic, at 370. Similarly, the Kathawala article expressly states: "For most substances, although not for all, the relative potency determined in in vitro microsomal assay against HMG-CoA reductase parallels the in vivo activity in rats for the inhibition of 14C-acetate into sterols." Kathawala at 136-37. On these facts, we hold that the Board did not err in finding that Wattanasin's in vitro tests established a practical utility for the genus recited in the compound count.

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n6 The two articles are D. R. Sliskovic et al, Inhibitors of Cholesterol Biosynthesis, 34 J. Med. Chemistry 367 (1991) (Sliskovic); and F. G. Kathawala, HMG-CoA Reductase Inhibitors: An Exciting Development in the Treatment of Hyperlipoproteinemia, 11 Medicinal Research Reviews 121 (1991) (Kathawala).

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[19]**

B

Turning to the method count, the Board found that Wattanasin reduced the method to practice in December 1987 when successful in vivo testing of the compound was completed. This finding, too, was based on testimony that the in vivo data for one of the compounds tested, 64-935, showed significant cholesterol inhibiting activity in the laboratory rats tested.

Fujikawa challenges the Board's holding by referring to an anomaly in the test data of the 64-935 compound which it contends undercuts the reliability of the in vivo tests. In particular, Fujikawa points to the fact that the compound's potency was less at a dosage of 0.3 mg than it was at a dosage of 0.1 mg. On the basis of this aberration, Fujikawa's expert, Dr. Holmlund, testified that this test data was unreliable and could not support a finding that the compound was pharmacologically active.

It is clear from the Board's opinion, however, that to the extent Dr. Holmlund was testifying that this aberration would lead one of ordinary skill to completely reject these test results, the Board did not accept his testimony. This decision of the Board was not clear error. Admittedly, the decreased potency at 0.3 **[**20]** mg is curious. The question remains, however, as to how much this glitch in the data would undercut the persuasiveness of the test results as a whole in the mind of one of ordinary skill. Each party presented evidence on this point and the Board resolved this disputed question of fact by finding that the test results as a whole were sufficient to establish pharmacological activity in the minds of those skilled in the art. In doing so, the Board properly exercised its duty as fact finder, and we therefore affirm its finding on this point. n7

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n7 Before the Board, Fujikawa additionally argued that in vivo testing cannot establish reduction to practice of the method count because it does not fulfill every limitation of the count. In particular, Fujikawa argued that only human beings can be considered "patients in need of" cholesterol biosynthesis inhibition, as required by the count. As noted above, the Board rejected this argument and held that the term "patient" in the count is broad enough to encompass mammals, such as the laboratory rats tested in vivo.

In its brief to this court, Fujikawa renews this argument. In the process, however, Fujikawa seems to add an additional ground which it did not argue before the Board below. We are not absolutely certain, but it appears that Fujikawa is now contending that in vivo testing cannot constitute a reduction to practice because the rats tested were, from all that would appear, healthy animals, rather than animals in need of cholesterol biosynthesis inhibition. To the extent that Fujikawa's argument before this court is directed to this novel ground not raised below, we consider the argument waived and decline to address it. To the extent that Fujikawa is still arguing that the count requires administration of the compound to a human, we disagree, and affirm the Board's decision on this point.

- - - - - - - - - - - - End Footnotes- - - - - - - - - - - - - - **[**21]**

As noted above, Fujikawa does not challenge the Board's conclusions that Wattanasin conceived prior to Fujikawa's effective date or that Wattanasin pursued the invention with diligence from just prior to Fujikawa's date until his reductions to practice in October and December 1987. Consequently, we affirm the Board's finding that Wattanasin has shown conception coupled with diligence from just prior to Fujikawa's effective date of August 20, 1987 up to the date he reduced the invention to practice in October 1987, for the compound, or December 1987, for the method.

IV

Having determined that Wattanasin was the de facto first inventor, the remaining question before the Board was whether Wattanasin had suppressed or concealed the invention **[*1567]** between the time he reduced to practice and the time he filed his patent application. Suppression or concealment of the invention by Wattanasin would entitle Fujikawa to priority. 35 U.S.C. § 102(g).

*HN8*Suppression or concealment is a question of law which we review de novo. Brokaw v. Vogel, 57 C.C.P.A. 1296, 429 F.2d 476, 480, 166 U.S.P.Q. (BNA) 428, 431 (CCPA 1970). Our case law distinguishes *HN9*between two types of suppression and concealment: cases in which the **[**22]** inventor deliberately suppresses or conceals his invention, and cases in which a legal inference of suppression or concealment is drawn based on "too long" a delay in filing a patent application. Paulik v. Rizkalla, 760 F.2d 1270, 1273, 226 U.S.P.Q. (BNA) 224, 226 (Fed. Cir. 1985) (in banc).

Fujikawa first argues that there is evidence of intentional suppression or concealment in this case. HN10Intentional suppression refers to situations in which an inventor "designedly, and with the view of applying it indefinitely and exclusively for his own profit, withholds his invention from the public." Id. (quoting Kendall v. Winsor, 62 U.S. (21 How.) 322, 328, 16 L. Ed. 165 (1858)). Admittedly, Sandoz was not overly efficient in preparing a patent application, given the time which elapsed between its reduction to practice in late 1987 and its ultimate filing in March 1989. Intentional suppression, however, requires more than the passage of time. It requires evidence that the inventor intentionally delayed filing in order to prolong the period during which the invention is maintained in secret. Cf. Peeler v. Miller, 535 F.2d 647, 653-54, 190 U.S.P.Q. (BNA) 117, 122 (CCPA 1976) (implying that intentional suppression **[**23]** requires showing of specific intent). Fujikawa presented no evidence that Wattanasin delayed filing for this purpose. On the contrary, all indications are that throughout the period between reduction to practice and filing, Sandoz moved slowly (one might even say fitfully), but inexorably, toward disclosure. We therefore hold that Wattanasin did not intentionally suppress or conceal the invention in this case.

Absent intentional suppression, the only question is whether the 17 month period between the reduction to practice of the compound, or the 15 month period between reduction to practice of the method, and Wattanasin's filing justify an inference of suppression or concealment. See id. The Board held that these facts do not support such an inference. As the Board explained: "In our view, this hiatus in time is not sufficiently long to raise the inference that Wattanasin suppressed or concealed the invention considering the nature and complexity of the invention here."

Fujikawa attacks this finding of the Board on two grounds. First, it contends that the Board should not have held that a 15 or 17 month delay is per se insufficient to raise an inference of suppression **[**24]** or concealment without examining the circumstances surrounding the delay and whether, in view of those circumstances, Wattanasin's delay was reasonable. Second, Fujikawa argues that the Board failed to consider evidence that Wattanasin was spurred to file by the issuance of a patent to a third party, Picard, directed to the same genus of compounds invented by Wattanasin. HN11Evidence that a first inventor was spurred to disclose by the activities of a second inventor has always been an important factor in priority determinations because it creates an inference that, but for the efforts of the second inventor, "the public would never have gained knowledge of [the invention]." Brokaw, 429 F.2d at 480, 166 U.S.P.Q. (BNA) at 431. Here, however, the Board expressly declined to consider the evidence of spurring because it held that spurring by a third party who is not a party to the interference is irrelevant to a determination of priority as between Wattanasin and Fujikawa. We first address Fujikawa's arguments concerning spurring.

A

We are not certain that the Board is correct that third party spurring is irrelevant in determining priority. After all, "what is involved here is a policy question **[**25]** as to which of the two rival inventors has the greater right to a patent." Brokaw, 429 F.2d at 480, 166 U.S.P.Q. (BNA) at 430. Resolution of this question could well be affected by the fact that one of the inventors chose to maintain his **[*1568]** invention in secrecy until disclosure by another spurred him to file, even when the spurrer was a third party not involved in the interference. We need not resolve that question here, however, because we hold that no reasonable fact finder could have found spurring on the facts of this case. The only evidence in the record on the question of spurring is the testimony of Ms. Geisser who expressly testified that she had already begun work on the Wattanasin draft application before she learned of Picard's patent, in other words, that she had not been spurred by Picard. Consequently, we leave the question of the relevance of third party spurring for another case.

B

Fujikawa's other argument also requires us to examine the evidence of record in this case. As Fujikawa correctly notes, HN12this court has not set strict time limits regarding the minimum and maximum periods necessary to establish an inference of suppression or concealment. See Correge v. Murphy **[**26]** , 705 F.2d 1326, 1330, 217 U.S.P.Q. (BNA) 753, 756 (Fed. Cir. 1983). Rather, we have recognized that "it is not the time elapsed that is the controlling factor but the total conduct of the first inventor." Young v. Dworkin, 489 F.2d 1277, 1285, 180 U.S.P.Q. (BNA) 388, 395 (CCPA 1974) (Rich, J., concurring). Thus, the circumstances surrounding the first inventor's delay and the reasonableness of that delay are important factors which must be considered in deciding questions of suppression or concealment. See, e.g., id. at 1281-82, 180 U.S.P.Q. (BNA) at 392-93. Fujikawa again correctly notes that the Board's opinion gives short shrift to the question of whether this delay on the facts of this case was reasonable. In seeking reversal of the Board's decision, Fujikawa asks us to assess the factual record for ourselves to determine whether Wattanasin engaged in sufficient disclosure-related activity to justify his 17-month delay in filing. The facts of record, however, do not support Fujikawa's position.

In our view, the circumstances in this case place it squarely within the class of cases in which an inference of suppression or concealment is not warranted. We acknowledge, of course, that each **[**27]** case of suppression or concealment must be decided on its own facts. Still, the rich and varied case law which this court has developed over many years provides some guidance as to the type of behavior which warrants an inference of suppression or concealment. See Paulik, 760 F.2d at 1280, 226 U.S.P.Q. (BNA) at 231-32 (Rich, J., concurring). In this case Wattanasin delayed approximately 17 months between reduction to practice and filing. During much of that period, however, Wattanasin and Sandoz engaged in significant steps towards perfecting the invention and preparing an application. For example, we do not believe any lack of diligence can be ascribed to Wattanasin for the period between October and December 1987 when in vivo testing of the invention was taking place. See Young, 489 F.2d at 1281, 180 U.S.P.Q. (BNA) at 392. Similarly, at its first opportunity following the in vivo testing, the Sandoz patent committee approved Wattanasin's invention for filing. This takes us up to the end of January 1988.

Over the next several months, until May 1988, the Sandoz patent department engaged in the necessary collection of data from the inventor and others in order to prepare Wattanasin's patent **[**28]** application. We are satisfied from the record that this disclosure-related activity was sufficient to avoid any inference of suppression or concealment during this period. n8 Cf. Correge, 705 F.2d at 1330-31, 217 U.S.P.Q. (BNA) at 756 (five significant acts of disclosure-related activity over the course of seven months sufficient to rebut any inference of suppression). Also, as noted above, the record indicates that by August 1988, Ms. Geisser was already at work preparing the application, and that work continued on various drafts until Wattanasin's filing date in March 1989. Thus, the only real period of unexplained delay in this case is the **[*1569]** approximately three month period between May and August of 1988.

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n8 Our conclusion in this regard is based, in small part, on the testimony of Mr. Melvyn Kassenoff, a lawyer in Sandoz's patent department. Before the Board, Fujikawa challenged large parts of this testimony as inadmissible. In this opinion we therefore rely only on those portions of the testimony which even Fujikawa concedes are admissible, i.e., testimony relating to Mr. Kassenoff's legal services rendered in connection with the prosecution of Wattanasin's application.

- - - - - - - - - - - - End Footnotes- - - - - - - - - - - - - - **[**29]**

Given a total delay of 17 months, an unexplained delay of three months, the complexity of the subject matter at issue, and our sense from the record as a whole that throughout the delay Sandoz was moving, albeit slowly, towards filing an application, we conclude that this case does not warrant an inference of suppression or concealment. Consequently, we affirm the Board on this point.

C

Finally, Fujikawa contends that assuming in vitro tests are sufficient to establish reduction to practice, Wattanasin reduced the compound count to practice in 1984 when he completed in vitro testing of his first three compounds falling within the scope of the count. If so, Fujikawa argues, the delay between reduction to practice and filing was greater than four years, and an inference of suppression or concealment is justified. n9

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n9 This argument, of course, relates only to the compound count, since, as explained above, the method count was not reduced to practice until the in vivo testing in December 1987.

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We reject this argument in view of Paulik v. Rizkalla, 760 F.2d 1270, 226 U.S.P.Q. (BNA) 224 (Fed. Cir. 1985) (in banc). In Paulik, we held that a suppression or concealment could be negated by renewed activity prior to an opposing party's effective date. There, inventor Paulik reduced his invention to practice and submitted an invention disclosure to his employer's patent department. For four years the patent department did nothing with the disclosure. Then, just two months before Rizkalla's effective date, the patent department allegedly picked up Paulik's disclosure and worked diligently to prepare a patent application which it ultimately filed. See id. at 1271-72, 226 U.S.P.Q. (BNA) at 224-25. We held that although Paulik could not rely on his original date of reduction to practice to establish priority, he could rely on the date of renewed activity in his priority contest with Rizkalla. In large measure, this decision was driven by the court's concern that denying an inventor the benefit of his renewed activity, might "discourage inventors and their supporters from working on projects that had been 'too long' set aside, because of the impossibility of relying, in a priority contest, **[**31]** on either their original work or their renewed work." Id. at 1275-76, 226 U.S.P.Q. (BNA) at 227-28.

Paulik's reasoning, if not its holding, applies squarely to this case. A simple hypothetical illustrates why this is so. Imagine a situation similar to the one facing Sandoz in early 1987. A decisionmaker with limited funds must decide whether additional research funds should be committed to a project which has been neglected for over two years. In making this decision, the decisionmaker would certainly take into account the likelihood that the additional research might yield valuable patent rights. Furthermore, in evaluating the probability of securing those patent rights, an important consideration would be the earliest priority date to which the research would be entitled, especially in situations where the decisionmaker knows that he and his competitors are "racing" toward a common goal. Thus, the right to rely on renewed activity for purposes of priority would encourage the decisionmaker to fund the additional research. Conversely, denying an inventor the benefit of renewed activity would discourage the decisionmaker from funding the additional research.

Here, Wattanasin returned **[**32]** to his abandoned project well before Fujikawa's effective date and worked diligently towards reducing the invention to practice a second time. For the reasons explained above, we hold that, on these facts, Wattanasin's earlier reduction to practice in 1984 does not bar him from relying on his earliest date of renewed activity for purposes of priority.

V

Fujikawa also appeals the Board's decision denying Fujikawa's motion to add a sub-genus count to the interference. The Board denied the motion because it found that Wattanasin's disclosure did not sufficiently describe Fujikawa's proposed count. *HN13*Whether a disclosure contains a sufficient written description to support a proposed count, is a question of fact which we review **[*1570]** for clear error. Ralston Purina Co. v. Far-Mar-Co, Inc., 772 F.2d 1570, 1575, 227 U.S.P.Q. (BNA) 177, 179 (Fed. Cir. 1985). We affirm the Board's denial of Fujikawa's motion because we do not believe it was clearly erroneous.

Wattanasin's application disclosed compounds of the following structure:

SEE ILLUSTRATION IN ORIGINAL

wherein each of R and R0 is, independently, C1-6 alkyl (primary, secondary, or tertiary), C3-7 cycloalkyl, or the following ring,
SEE **[**33]** ILLUSTRATION IN ORIGINAL
and each of R1, R2, R3, R4, and R5 is, independently, hydrogen, C1-4alkyl, C1-4alkoxy, trifluoromethyl, fluoro, chloro, phenoxy, benzyloxy, or hydroxy.

In addition to this genus of compounds, Wattanasin disclosed as his preferred embodiments that: R1 and R2 are most preferably hydrogen, R0 is most preferably phenyl, 4-fluorophenyl, or 3,5-dimethylphenyl; and R is most preferably methyl n10 or isopropyl. n11

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n10 Methyl is another name for C1 alkyl.

n11 isopropyl is another name for C3 alkyl.

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Essentially, Fujikawa's proposed sub-genus is directed to compounds of the above structure in which R is cyclopropyl n12 and R0 is 4-fluorophenyl. In other respects, the parties do not dispute that the particular constituents recited in Fujikawa's proposed count are adequately disclosed in Wattanasin's application. Thus, for example, both Wattanasin's most preferred embodiment and Fujikawa's proposed count describe R1 and R2 as hydrogen.

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n12 cyclopropyl is another name for C3 cycloalkyl.

- - - - - - - - - - - - End Footnotes- - - - - - - - - - - - - **[**34]**

In denying Fujikawa's motion, the Board first noted that the proposed sub-genus was not disclosed ipsis verbis by Wattanasin. Specifically, the Board noted that Wattanasin preferred methyl and isopropyl for R, rather than cyclopropyl as in the proposed count. In addition, Wattanasin listed three preferred choices for R0 only one of which was 4-fluorophenyl and gave no indication in his application as to whether he would prefer any one of the choices over the other two.

As the Board recognized, however, HN14ipsis verbis disclosure is not necessary to satisfy the written description requirement of section 112. Instead, the disclosure need only reasonably convey to persons skilled in the art that the inventor had possession of the subject matter in question. In re Edwards, 568 F.2d 1349, 1351-52, 196 U.S.P.Q. (BNA) 465, 467 (CCPA 1978). In other words, the question is whether Wattanasin's "application provides adequate direction which reasonably [would lead] persons skilled in the art" to the sub-genus of the proposed count. Id. at 1352, 196 U.S.P.Q. (BNA) at 467.

Many years ago our predecessor court graphically articulated this standard by analogizing a genus and its constituent species **[**35]** to a forest and its trees. As the court explained:

> It is an old custom in the woods to mark trails by making blaze marks on the trees. It is no help in finding a trail . . . to be confronted simply by a large number of unmarked trees. Appellants are pointing to trees. We are looking for blaze marks which single out particular trees. We see none.

In re Ruschig, 54 C.C.P.A. 1551, 379 F.2d 990, 994-95, 154 U.S.P.Q. (BNA) 118, 122 (CCPA 1967).

[*1571] In finding that Wattanasin's disclosure failed to sufficiently describe the proposed sub-genus, the Board again recognized that the compounds of the proposed count were not Wattanasin's preferred, and that his application contained no blazemarks as to what compounds, other than those disclosed as preferred, might be of special interest. In the absence of such blazemarks, simply describing a large genus of compounds is not sufficient to satisfy the written description requirement as to particular species or sub-genuses. See, e.g., 379 F.2d at 994, 154 U.S.P.Q. (BNA) at 122 ("Specific claims to single compounds require reasonably specific supporting disclosure and while . . . naming [each species] is not essential, something more than the disclosure of a class **[**36]** of 1000, or 100, or even 48 compounds is required.").

Before this court, Fujikawa challenges the Board's denial of its motion on two grounds. First, Fujikawa persists in arguing that its proposed count is disclosed ipsis verbis in Wattanasin's application. The basis for this contention seems to be that Wattanasin lists cyclopropyl as one possible moiety for R in his disclosure of the genus. Clearly, however, just because a moiety is listed as one possible choice for one position does not mean there is ipsis verbis support for every species or sub-genus that chooses that moiety. Were this the case, a "laundry list" disclosure of every possible moiety for every possible position would constitute a written description of every species in the genus. This cannot be because such a disclosure would not "reasonably lead" those skilled in the art to any particular species. We therefore reject Fujikawa's argument on this point.

Second, Fujikawa claims that the Board erred in finding that Wattanasin's disclosure contained insufficient blazemarks to direct one of ordinary skill to the compounds of its proposed count. Specifically, Fujikawa points out that with respect to practically **[**37]** every position on the compound, the proposed count recites at least one of Wattanasin's preferred choices. Even with respect to position R, Fujikawa further explains, one of ordinary skill would have been moved by Wattanasin's disclosure to substitute cyclopropyl for isopropyl because the two substituents are isosteric.

While Fujikawa's arguments are not without merit, we cannot say, on this record, that the Board's decision was clearly erroneous. As the Board pointed out, Fujikawa's proposed sub-genus diverges from Wattanasin's preferred elements at least with respect to position R. Although, in hindsight, the substitution of cyclopropyl for isopropyl might seem simple and foreseeable, Wattanasin's disclosure provides no indication that position R would be a better candidate for substitution than any other. Thus, faced with Wattanasin's disclosure, it was not clear error to hold that one of ordinary skill would not be led to Fujikawa's sub-genus in particular.

Were we to extend Ruschig's metaphor to this case, we would say that it is easy to bypass a tree in the forest, even one that lies close to the trail, unless the point at which one must leave the trail to find the tree **[**38]** is well marked. Wattanasin's preferred embodiments do blaze a trail through the forest; one that runs close by Fujikawa's proposed tree. His application, however, does not direct one to the proposed tree in particular, and does not teach the point at which one should leave the trail to find it. We therefore affirm the Board's denial of Fujikawa's motion.

VI

For the reasons we set forth above, the decision of the Board is, in all respects,

AFFIRMED.

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*1990 Pat. App. LEXIS 19, *; 17 U.S.P.Q.2D (BNA) 1716*

Ex parte

Appeal No. 89-2432 from Art Unit 122.

Application for Patent filed February 28, 1986, Serial No. 834,577.

Quinolonecarboxylic Acid Derivative and Process for Its Preparation.

Board of Patent Appeals and Interferences

1990 Pat. App. LEXIS 19; 17 U.S.P.Q.2D (BNA) 1716

May 22, 1990, Heard
June 5, 1990, Decided

CORE TERMS: compound, examiner, obviousness, disclosure, subject matter, unexpectedly, completeness, forty-seven, declaration, substituent, forty-six, sake, pharmaceutical, composition, superiority, rejection of claim, anaerobic bacteria, anticipation, anticipated, synthetic, unobvious, formula, generic, arrive, antibacterial, unexpected, patent, species, doses

[*1]

Before Goldstein, Metz and Wiseman, Examiners-in-Chief.

COUNSEL:
Richard D. Kelly et al. for appellants.
Oblon, Fisher, spival, McClelland and Maier
Crystal Square Five - Ste. 400
1755 S. Jefferson Davis Hwy.
Arlington, VA 22202

Supervisory Primary Examiner - Donald G. Daus.

Examiner - E. Bernhardt.

OPINIONBY: GOLDSTEIN

OPINION:
Goldstein, Examiner-in-Chief.

This appeal was originally taken from the examiner's final rejection of claims 1, 3 and 4. Subsequently claim 4 was cancelled. Although, at the beginning of appellants' appeal brief, it is stated that this appeal is "from the final rejection of all claims pending in this application," claim 3 was not reproduced in the brief on appeal. The examiner assumed that this omission was inadvertent but, by implication from the fact that claim 3 has not been argued separately in the brief, and from statements made upon oral hearing of this appeal, it appears likely that the rejection of claim 3 was not intended to be appealed. Nonetheless, in the event that we are mistaken in drawing this inference, we shall treat claim 3 as being on appeal. Because, as we have already indicated, no separate arguments have been presented, claim 3 may be considered to stand or **[*2]** fall with claim 1. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986); In re Burckel, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979). Even so, for the sake of completeness, we shall address specific remarks to the patentability of claim 3 in this decision.

References relied on by the examiner on appeal are:

Culbertson et al. (Culbertson)	4,638,067	Jan. 20, 1987
Petersen et al. (Petersen)	167,763	Jan. 15, 1986
Irikura (Great Britain)	2,057,440	Apr. 1, 1981

Claims 1 and 3 have been finally rejected under 35 USC 102(a) as being anticipated by Peterson. We shall affirm this rejection.

All page references in the following discussion shall be to the English language translation of record (apparently supplied by appellants) of the European patent specification, which was originally published in German.

The examiner has adequately explained the basis of the conclusion that the reference anticipates the appealed claims and sufficiently convincingly rebutted all of appellants' arguments that we could simply adopt the examiner's position as our own, adding no further comment. However, since appellants have expressly invited us to decide what they consider to be "a significant **[*3]** policy question," n1 we feel constrained to present additional comments, both to emphasize those aspects of the examiner's position with which we agree and for the sake of completeness.

n1 The "policy question" appears to be whether or not the Patent and Trademark Office shall continue to interpret 35 USC 102(a) literally.

Appellants have acknowledged (at least implicitly on the written record and expressly upon oral hearing) that the synthetic procedures disclosed in the reference enable the preparation of the compound * * *, which is explicitly disclosed at page 13 of the reference. It has not been controverted that the name of the compound disclosed corresponds to the formula presented in appellants' claim 1. Thus, even if there were no disclosure of utility in the reference, the examiner would have been correct in holding that the claim was anticipated, and the examiner's citation of In re Hafner, 56 CCPA 1424, 410 F.2d 1403, 161 USPQ 783 (1969) would have been quite appropriate. Since the reference does disclose a specific utility for the compound (generally the same utility as in the present case), this issue does not arise (but see the discussion of Claim 3, below). **[*4]**

We find only twenty-two compounds in the list presented at pages 12 to 14, disclosed in addition to those listed in the working examples, and not twenty-three as found by the examiner. There are twenty-four compounds disclosed in the working examples. In either event, forty-six or forty-seven compounds hardly amounts to the "list of thousands" referred to in In re Wiggins, 488 F.2d 538, 543, 179 USPQ 421, 425 (CCPA 1973), relied on by appellants. Furthermore, as the examiner has correctly pointed out, the critical issue in Wiggins was whether or not the name of a compound was a description of that compound in the absence of a known synthetic method of producing that compound. That issue does not arise on the present facts.

Even if the number of compounds disclosed in the reference were several orders of magnitude greater, we would come to the same conclusion. The tenth edition of the Merck Index lists ten thousand compounds. In our view, each and every one of those compounds is "described," as that term is used in 35 USC 102(a), in that publication. A similar conclusion would be appropriate with respect to the approximately 1.5 million compounds disclosed in the **[*5]** Beilstein Handbook (Handbuch der Organischen Chemie). As a general principle it has long been held, even where the issue was one of obviousness and not clear anticipation or description, that the comprehensiveness of a reference disclosure does not derogate from its teaching effect. Merck Co. v. Biocraft Laboratories, Inc., F.2d , 10 USPQ2d 1843 (Fed. Cir. 1989); In re Corkill, 771 F.2d 1496, 226 USPQ 105 (Fed. Cir. 1985). In re Susi, 58 CCPA 1074, 440 F.2d 442, 169 USPQ 423 (1971); In re Lemin, 51 CCPA 1404, 332 F.2d 839, 141 USPQ 814 (CCPA 1964); In re Rosicky, 276 F.2d 656, 125 USPQ 341 (CCPA 1960).

With regard to the numerous other precedents discussed by appellants, they invariably deal with a significantly different set of facts. In each case, to arrive at the claimed subject matter, it was necessary to select portions of that subject matter from various sections of the reference disclosure and combine them n2, e.g., selecting values for variable substituents to interpolate into a generic structural formula to arrive at a specific compound. Even in those cases, if the classes were sufficiently limited or well delineated, anticipation was found. **[*6]** Compare In re Arkley, 455 F.2d 586, 172 USPQ 524 (CCPA 1972), with In re Sivaramakrishnan, 673 F.2d 1383, 213 USPQ 441 (CCPA 1982), In re Schaumann, 572 F.2d 312, 197 USPQ 5 (CCPA 1978); In re Petering, 301 F.2d 676, 133 USPQ 275 (CCPA 1962).

n2 Somewhat reminiscent of the lexicographer who described his dictionary as "a poem about everything," but clearly not the case here.

Of course, it goes without saying (but, equally of course, we are going to say it) that the evidence of asserted unobvious results of record is not relevant to this rejection. In re Malagari, 499 F.2d 1297, 182 USPQ 549 (CCPA 1974).

Claim 3, which recites "an antibacterial pharmaceutical composition" broadly, may or may not be intended to be on appeal, as we have discussed above, and no separate arguments have been drawn to this claim. Nonetheless, we shall indicate our reasons for considering the above comments to apply to essentially the same degree to the rejection of claim 3, for the sake of completeness of this record, in the event, for example, that further appeal should be taken from this decision.

As we have stated above, there are only forty-six (or forty-seven) compounds described **[*7]** specifically in the reference. The compounds are disclosed as having "antibacterial activity" and being "meant for use as active compounds in medicaments" (see Item 57 on the title page). Various types of specific pharmaceutical compositions utilizing various acceptable carriers are expressly disclosed at pages 28 to 30. The nature of this disclosure is such that we are convinced that this reference should appropriately be considered to "describe," in the sense of 35 USC 102, pharmaceutical compositions containing each of the forty-six (or forty-seven) specific, pharmaceutically active compounds disclosed. Again, compare Arkley with Sivaramakrishnan, Schaumann and Petering.

Claims 1 and 3 have been finally rejected under 35 USC 103 as being unpatentable over Culbertson in view of Irikura. We shall not affirm this rejection.

On the issue of prima facie obviousness, we would have found the examiner's conclusion to be supported by the disclosure of Culbertson alone. That disclosure is generic to the here claimed subject matter, and the species of Example 45 differs from appellants' claimed compound only in having an 8-fluoro substituent in place of an substituent. **[*8]**

With regard to this rejection under 35 USC 103, appellants evidence of asserted unobvious results is relevant. We have considered that evidence, specifically the declaration of Irikura, under 37 CFR 1.132, and we disagree with the examiner's conclusion. It is the examiner's position that, to rebut the evidence of obviousness, it is necessary for the claimed compound to be unexpectedly different from the reference compounds "overall," i.e., in its therapeutic effect against all bacteria. However, appellants' thesis is that their compound is unexpectedly and significantly superior against anaerobic bacteria, a property which makes it unexpectedly suited for a specific, important utility. Conceptually, this can be the basis for overcoming a prima facie case of obviousness. In re Chupp, 816 F.2d 643, 2 USPQ2d 1437 (Fed. Cir. 1986); In re Murch, 464 F.2d 1051, 175 USPQ 89 (CCPA 1972). The issue in each case is the weight of the actual evidence of unobviousness presented, balanced against the weight of obviousness of record.

In the declaration (page 2, first complete paragraph), it is indicated that a difference in minimim inhibitory concentration of a factor of two is **[*9]** considered to be "activity . . . on the same level." Even when this consideration is taken into account, however, appellants' claimed compound is significantly more active n3 against the first seven species of anaerobic bacteria listed in Table 1-b. Furthermore, Figures 1a and 1b illustrate that appellant's compound, when administered in the same dosage, provides substantially higher serum levels, for at least two hours at low doses and a substantially longer period of time at higher doses. In the absence of any explanation to support a holding to the contrary, we accept the conclusion at page 11 of the declaration that the evidence indicates "superiority" and that the "superiority was unexpected." In view of the precedents cited above, we find this evidence of unexpected superiority adequate to outweigh the evidence of obviousness found in the references adduced by the examiner.

n3 When compared to the compound of Culbertson Example 45, which the examiner agrees is the closest prior art compound of record.

The decision of the examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR 1.136(a). See the final **[*10]** rule notice, 54 F.R. 29548 (July 13, 1989), 1105 O.G. 5 (August 1, 1989).

AFFIRMED

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Citation: **933 F2d 982**

*933 F.2d 982, *; 1991 U.S. App. LEXIS 9421, **;*
18 U.S.P.Q.2D (BNA) 1885

In Re JEFFREY B. GORMAN and MARILYN KATZ

No. 90-1362

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

933 F.2d 982; 1991 U.S. App. LEXIS 9421; 18 U.S.P.Q.2D (BNA) 1885

May 13, 1991, Decided

PRIOR HISTORY:

[1]** Appealed from U.S. Patent & Trademark Office Board of Patent Appeals & Interferences.

DISPOSITION: Affirmed.

CASE SUMMARY

PROCEDURAL POSTURE: Applicants appealed from decision of the United States Patent & Trademark Office Board of Patent Appeals & Interferences that denied patentability of all claims in their patent application.

OVERVIEW: Applicants invented a composite candy sucker on a stick that was molded in shape of a human thumb. Liquid candy was poured into a mold. The end was sealed with an edible plug of bubble or chewing gum or chocolate or food-grade wax. The mold was removable and was described as a toy and novelty item. Each element of applicants' claimed invention was prior art, separately or in sub-combination. Applicants argued that their invention should not have been rejected for obviousness under 35 U.S.C.S. § 103 because it was necessary to combine teachings of a large number of references. The court found that the large number of references did not negate the obviousness of the combination. The claim elements appeared in prior art in same configurations, served the same functions, and achieved the results suggested in prior art. The court concluded that the claimed invention as a whole was obvious in terms of 35 U.S.C.S. § 103.

OUTCOME: The decision was affirmed because each element of applicants' claimed invention existed in prior art, separately or in sub-combination.

CORE TERMS: candy, mold, invention, flexible, rigid, plug, stick, comprising, obviousness, ice cream, thumb-shaped, shell, elastomeric, extending, hardened, teaching, joint-shaped, vertical, upper, axis, confection, wrapper, chewing gum, plastic, opening, thumb, lobes, seal, large number, downwardly

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Patent Law > Nonobviousness > Elements & Tests > General Overview

*HN1*The criterion to support a rejection for obviousness under 35 U.S.C.S. § 103 is not the number of references, but what they would have meant to a person of ordinary skill in the field of the invention. More Like This Headnote

Patent Law > Inequitable Conduct > Effect, Materiality & Scienter > General Overview
Patent Law > Claims & Specifications > Enablement Requirement > General Overview
Patent Law > Nonobviousness > Elements & Tests > General Overview

HN2 Determination of whether a new combination of known elements would have been obvious to one of ordinary skill depends on various factors, including whether the elements exist in analogous art, that is, art that is reasonably pertinent to the problem with which the inventor is concerned. When the references are all in the same or analogous fields, knowledge thereof by a hypothetical person of ordinary skill is presumed, and the test is whether the teachings of the prior art, taken as a whole, would have made obvious the claimed invention. More Like This Headnote

Patent Law > Nonobviousness > Elements & Tests > Hindsight
Patent Law > Inequitable Conduct > General Overview
Patent Law > Nonobviousness > Evidence & Procedure > General Overview

HN3 When it is necessary to select elements of various teachings in order to form claimed invention, a court ascertains whether there is any suggestion or motivation in prior art to make selection made by applicant. Obviousness can not be established by combining teachings of prior art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. The extent to which such suggestion must be explicit in, or may be fairly inferred from, references, is decided on facts of each case, in light of prior art and its relationship to applicant's invention. As in all determinations under 35 U.S.C.S. § 103, decisionmaker must bring judgment to bear. It is impermissible, however, simply to engage in hindsight reconstruction of claimed invention, using applicant's structure as template and selecting elements from references to fill gaps. References themselves must provide some teaching whereby applicant's combination would have been obvious. More Like This Headnote

Patent Law > Nonobviousness > Elements & Tests > Hindsight
Patent Law > U.S. Patent & Trademark Office Proceedings > General Overview
Patent Law > Anticipation & Novelty > General Overview

HN4 A claim that is narrowly and specifically drawn must nevertheless meet the requirements of 35 U.S.C.S. § 103. The mere fact that a claim recites in detail all of the features of an invention (i.e., is a picture claim) is never, in itself, justification for the allowance of such a claim. More Like This Headnote

COUNSEL: Thomas W. Tolpin, of Highland Park, Illinois, argued for Appellant.

Teddy S. Gron, Associate Solicitor, Office of the Solicitor, of Arlington, Virginia, argued for Appellee. With him on the brief was Fred E. McKelvey, Solicitor.

JUDGES: Rich, Newman, and Rader, Circuit Judges.

OPINIONBY: NEWMAN

OPINION: [*983] NEWMAN, Circuit Judge

Jeffrey B. Gorman and Marilyn Katz (hereinafter "Gorman") appeal the decision of the United States Patent and Trademark Office, Board of Patent Appeals and Interferences (the "Board") denying patentability to all the claims of Gorman's patent application Serial No. 06/882,480, entitled "Composite Food Product." We affirm.

The Invention

The claimed invention is a composite candy sucker on a stick, molded in an elastomeric mold in the shape of a human thumb. During the manufacturing process liquid candy is poured into the mold, and an edible plug of bubble or chewing gum or chocolate or food-grade wax is poured into the mold after the candy has hardened, serving as a seal for the end portion of the candy. A paper or plastic disc abuts and covers the plug. The mold serves as a cover that can be removed from the candy by **[**2]** means of protruding flanges. The cover is described as a "toy and novelty item".

Figure 1 shows the invention in the form in which it is marketed. Figure 2 shows the cover partially removed to reveal the candy portion (12) and the chewable or edible plug (58):

[*984] [SEE ILLUSTRATION IN ORIGINAL]

The claims describe the product in detail, as is apparent from claim 16, the claim pressed by Gorman in this appeal:

> 16. A composite food product, comprising:
>
> a candy core, said candy core being in a generally liquified form when formulated, heated, blended and poured into a mold and in a substantially thumb-shaped hardened form when cooled and removed from said mold;
>
> said thumb-shaped hardened form comprising said candy core positioned along a vertical axis and comprising a rigid joint-shaped portion, a rigid upper portion extending upwardly from said rigid joint-shaped portion along said vertical axis, and a rigid lower portion extending downwardly from said rigid joint-shaped portion along said vertical axis, said upper portion having a rigid finger nail-shaped portion with an upper rigid tip providing a rigid top end of said thumb-shaped hardened form and a rigid convex back extending rearwardly **[**3]** and downwardly from said rigid tip, and said rigid lower portion having a rigid bottom end and defining a recessed opening comprising a handle-receiving socket about said vertical axis;
>
> a removable resilient shell comprising a substantially thumb-shaped, elastomeric material selected from the group consisting of rubber and flexible plastic, said shell providing
>
> a mold for receiving and molding said liquified candy form,
>
> **[*985]** a removable outer protective cover positioned about and covering said hardened form comprising said candy core, and
>
> a toy and novelty item for placement upon the thumb of the user when removed from said hardened form comprising said candy core;
>
> said thumb-shaped elastomeric material comprising said removable resilient shell comprising a flexible joint-shaped portion, a flexible upper portion extending upwardly from said flexible joint-shaped portion along said vertical axis, and a flexible lower portion extending downwardly from said flexible joint-shaped portion along said vertical axis, said upper portion having a flexible finger nail-shaped portion with an upper flexible tip providing a flexible top end of said shell and a flexible convex back extending rearwardly **[**4]** and downwardly from said flexible tip, and said flexible lower portion having an enlarged open ended diverging base, said base having a larger circumference and transverse cross-

> sectional area than other portions of said shell and providing the bottom of said shell, said open ended based defining a plug-receiving chamber and an access opening for entrance of said liquified form and discharge of said hardened candy form, and a set of substantially symmetrical arcuate lobes extending radially outwardly from said base, said lobes being circumferentially spaced from each other and providing manually grippable flange portions to facilitate manual removal of said shell from said core;
>
> a plug positioned in said plug-receiving chamber adjacent said bottom of said shell, said plug abutting against the bottom of said core and providing a cap for substantially plugging and sealing the open end of said mold and cover to help enclose said candy core, and said plug comprising a food grade material selected from the group consisting of bubble gum, chewing gum, chocolate, and food grade wax;
>
> a handle having a connecting portion connected to said plug and said candy core and positioned in said plug-receiving **[**5]** opening and having a manually grippable handle portion extending downward from said connecting portion along said vertical axis; and
>
> a substantially planar annular disk for abuttingly engaging and removably seating against said base and said lobes adjacent said plug, said disk defining a central axial hole for slidable receiving said handle portion and having an outer edge with a maximum span larger than said access opening but less than the maximum diameter of said symmetrical set of lobes to substantially minimize the interference with manually gripping of said manual grippable flange portions of said lobes, said disk being of a material selected from the group consisting of paper, paperboard, and plastic, and providing a removable closure member and seal for substantially closing said access opening and sealing said plug and said candy core within said shell.

The claims were rejected in view of thirteen references. The primary references, patents to Siciliano, Copeman, and Pooler, show ice cream or candy molded in a plastic, rubber or elastomeric mold. In Siciliano and Copeman the mold also serves as the product wrapper. In Siciliano the ice cream is poured into the mold, a stick **[**6]** is inserted, the ice cream is hardened, and a cardboard cover seals the area between the stick and the elastomeric wrapper. Copeman and Kuhlke show candy lollipops molded in elastomeric molds. Copeman states that the mold may take "varying shapes, such as in the form of fruit, or animals" and Kuhlke discusses the desirability of sealing candy from the outside air. In Siciliano, Copeman and Kuhlke, the mold is peeled from the confection prior to use.

The two Nolte patents teach that gripping flanges may be placed on an ice cream wrapper to facilitate removal. Ahern and Knaust each show a disc-shaped seal or cover for a frozen confection. Ahern shows the cover in conjunction with ice cream on a stick.

Harris shows a hollow thumb-shaped lollipop into which the thumb is inserted, and **[*986]** Craddock shows a thumb-shaped confection supported on a disc-shaped handle; in both cases without the other elements shown by Gorman. Fulkerson shows a candy coating surrounding a block of ice cream, and a candy plug for retaining liquid syrup inside a cavity in the ice cream. Webster shows chewing gum entirely enclosing a liquid syrup product. Spiegel shows a chocolate layer having an alcohol diffusion barrier **[**7]** to plug the end of a plastic container of liqueur. Fulkerson, Webster and Spiegel all suggest the greater appeal to consumers of providing two different components in the same confection.

The Board found that all of the features of Gorman's product were known to the art, and that various combinations of these elements existed in known similar structures. The Board concluded that the applicant's claimed combination was suggested by and would have been obvious in light of the references.

Discussion

A

Each element of the Gorman claims is in the prior art, separately or in sub-combination. Gorman argues that when it is necessary to combine the teachings of a large number of references in order to support a rejection for obviousness under 35 U.S.C. § 103, this of itself weighs against a holding of obviousness.

*HN1*The criterion, however, is not the number of references, but what they would have meant to a person of ordinary skill in the field of the invention. In *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1383, 231 U.S.P.Q. (BNA) 81, 93 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947, 94 L. Ed. 2d 792, 107 S. Ct. 1606 (1987), the court held that a combination **[**8]** of about twenty references that "skirted all around" the claimed invention did not show obviousness. In other instances, on other facts, we have upheld reliance on a large number of references to show obviousness. Compare *In re Miller*, 34 C.C.P.A. 910, 159 F.2d 756, 758-59, 72 U.S.P.Q. (BNA) 512, 514-15 (CCPA 1947) (rejecting argument that the need for eight references for rejection supported patentability) with *Kansas Jack, Inc. v. Kuhn*, 719 F.2d 1144, 1149, 219 U.S.P.Q. (BNA) 857, 860 (Fed. Cir. 1983) (where teachings relied upon to show obviousness were repeated in a number of references, the conclusion of obviousness was strengthened). *See also, e.g., In re Troiel*, 47 C.C.P.A. 795, 274 F.2d 944, 947, 124 U.S.P.Q. (BNA) 502, 504 (CCPA 1960) (rejecting appellant's argument that combining a large number of references to show obviousness was "farfetched and illogical").

*HN2*Determination of whether a new combination of known elements would have been obvious to one of ordinary skill depends on various factors, including whether the elements exist in "analogous art", that is, art that is reasonably pertinent to the problem with which the inventor is concerned. *In re Deminski*, 796 F.2d 436, 442, 230 U.S.P.Q. (BNA) 313, 315 (Fed. Cir. 1986). **[**9]** When the references are all in the same or analogous fields, knowledge thereof by the hypothetical person of ordinary skill is presumed, *In re Sernaker*, 702 F.2d 989, 994, 217 U.S.P.Q. (BNA) 1, 5 (Fed. Cir. 1983), and the test is whether the teachings of the prior art, taken as a whole, would have made obvious the claimed invention. *See In re Young*, 927 F.2d 588, 591, 18 U.S.P.Q.2D (BNA) 1089, 1091 (Fed. Cir. 1991).

*HN3*When it is necessary to select elements of various teachings in order to form the claimed invention, we ascertain whether there is any suggestion or motivation in the prior art to make the selection made by the applicant. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 U.S.P.Q. (BNA) 543, 551 (Fed. Cir. 1985). "'Obviousness can not be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination.'" *In re Bond*, 910 F.2d 831, 834, 15 U.S.P.Q.2D (BNA) 1566, 1568 (Fed. Cir. 1990) (quoting *Carella v. Starlight Archery and Pro Line Co.*, 804 F.2d 135, 140, 231 U.S.P.Q. (BNA) 644, 647 (Fed. Cir. 1986)). **[**10]**

The extent to which such suggestion must be explicit in, or may be fairly inferred from, the references, is decided on the facts of each case, in light of the prior **[*987]** art and its relationship to the applicant's invention. As in all determinations under 35 U.S.C. § 103, the decisionmaker must bring judgment to bear. It is impermissible, however, simply to engage in a hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps. *Interconnect Planning*, 774 F.2d at 1143, 227 U.S.P.Q. (BNA) at 551. The references themselves must provide some teaching whereby the applicant's combination would have been obvious.

B

Gorman argues that the references showing ice cream in a mold or wrapper on a stick and the references showing candy in a mold or wrapper on a stick are not analogous, for they require different conditions of production. However, the Copeman reference shows the close relationship of these arts, stating that his elastomeric mold may be used for "frozen confections and other solid confections". We conclude that the ice cream on a stick and candy on a stick arts are **[**11]** analogous, and that the Siciliano, Copeman, Pooler, and Kuhlke references show or suggest Gorman's candy on a stick and covered with an elastomeric mold, for which the thumb-shape is shown by Harris or Craddock.

The suggestion of providing a layer of chewing gum, chocolate or the like, surrounding the candy core in the area not covered by the mold, to seal the candy and provide a second food product, is provided by Fulkerson, Webster, or Spiegel. The paper disc adjacent the base of the candy structure is shown in Ahern and Knaust. Harris and Craddock both show thumb-shaped candy. Gorman argues that the prior art does not suggest using the thumb-shaped cover as a toy after the candy is removed. However, Copeman states that his rubber mold may be used as a "toy balloon" after the candy is removed. Gorman argues that Craddock teaches away from the claimed invention because of Craddock's admonition that lollipops on sticks are dangerous to children. However, candy on a stick is too well known for this caution to contribute to unobviousness.

Claim 16 recites details such as a "joint-shaped portion", a "finger nail portion", an "upper portion", a "lower portion" and a "convex back", as descriptive **[**12]** of the thumb shape. Such details are shown in the references and do not contribute to unobviousness. *HN4*A claim that is narrowly and specifically drawn must nevertheless meet the requirements of § 103:

> The mere fact that a claim recites in detail all of the features of an invention (i.e., is a "picture claim") is never, in itself, justification for the allowance of such a claim.

Manual of Patent Examining Procedure, § 706 (Rev. 6, Oct. 1987) at pp. 700-6; *In re Romito*, 48 C.C.P.A. 983, 289 F.2d 518, 129 U.S.P.Q. (BNA) 359 (CCPA 1961) (rejecting a "picture claim").

Applying the principles of *Graham v. John Deere & Co.*, 383 U.S. 1, 17, 148 U.S.P.Q. (BNA) 459, 467, 15 L. Ed. 2d 545, 86 S. Ct. 684 (1966), we discern all of the elements of claim 16, used in substantially the same manner, in devices in the same field of endeavor. The various elements Gorman combined: the molded lollipop with a chewing gum plug, with the mold serving as the product wrapper; and candy in the shape of a thumb; are all shown in the cited references in various subcombinations, used in the same way, for the same purpose as in the claimed invention. The Board did not, as Gorman argues, pick and choose among isolated **[**13]** and inapplicable disclosures in the prior art. Rather, the claim elements appear in the prior art in the same configurations, serving the same functions, to achieve the results suggested in prior art. *In re Sernaker,* 702 F.2d at 994, 217 U.S.P.Q. (BNA) at 5. The large number of cited references does not negate the obviousness of the combination, for the prior art uses the various elements for the same purposes as they are used by appellants, making the claimed invention as a whole obvious in terms of 35 U.S.C. § 103.

The Board's decision is

AFFIRMED.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Eugene P. Marsh	Group Art Unit:	2824
Serial No.:	10/680,038	Examiner:	Christian Wilson
Filed:	7 October 2003	Docket No.:	150.01160102
		Confirmation No.:	8583

Title: DEVICES CONTAINING ZIRCONIUM-PLATINUM-CONTAINING MATERIALS AND METHODS FOR PREPARING SUCH MATERIALS AND DEVICES

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